

**Hornady**  
**andbook**  
of Cartridge Reloading

Third Edition





**Some notes  
on this book  
from J. W. Hornady**

"This Third Edition of the **Hornady Handbook** is the most complete and authoritative reference we have ever published on using the full line of Hornady Bullets. Both beginning and veteran reloaders will find it provides comprehensive information on handloading and shooting nearly 120 rifle and pistol cartridge combinations.

"Since it was first introduced in 1967, the **Hornady Handbook** has nearly doubled in size and the **Third Edition** contains 176 more pages than its predecessor. This revision, more than three years in preparation, contains data on more cartridges, powders and bullets than ever before. In addition, its pioneering ballistics tables have been extended and revised to make them more helpful and convenient than any others you have ever used.

"The easy-to-use handloading recommendations you'll find inside are based on nearly fifteen years and 250,000 rounds of test firing. As a result, you'll find that the **Third Edition** equips you to tailor your reloads for almost every conceivable hunting and shooting condition.

"Good shooting."

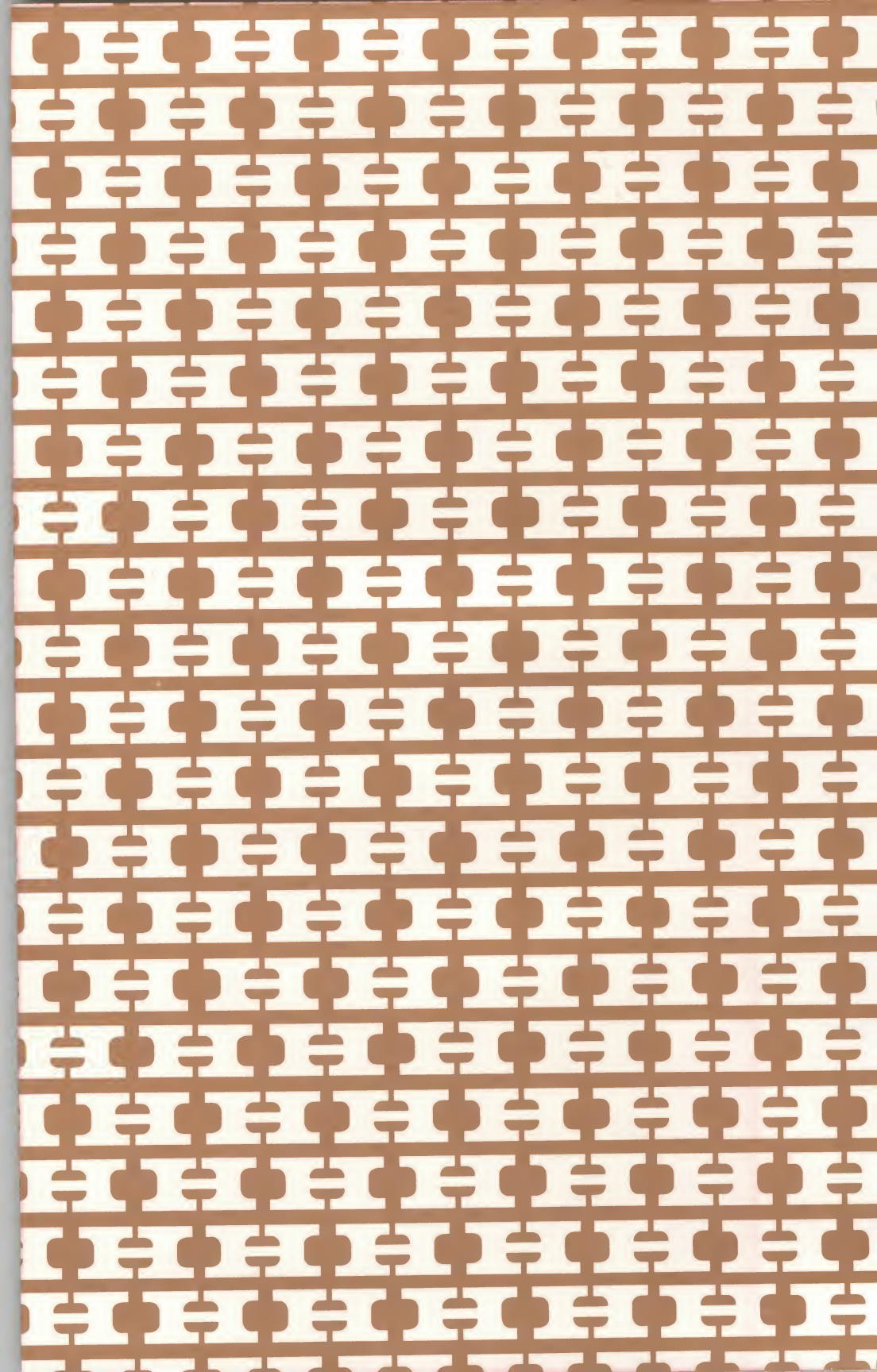
*J. W. Hornady*

*Continued on back flap*

**Hornady Handbook Third Edition**







*Hornady Handbook  
of  
Cartridge Reloading*

**Rifle-Pistol  
Third Edition**



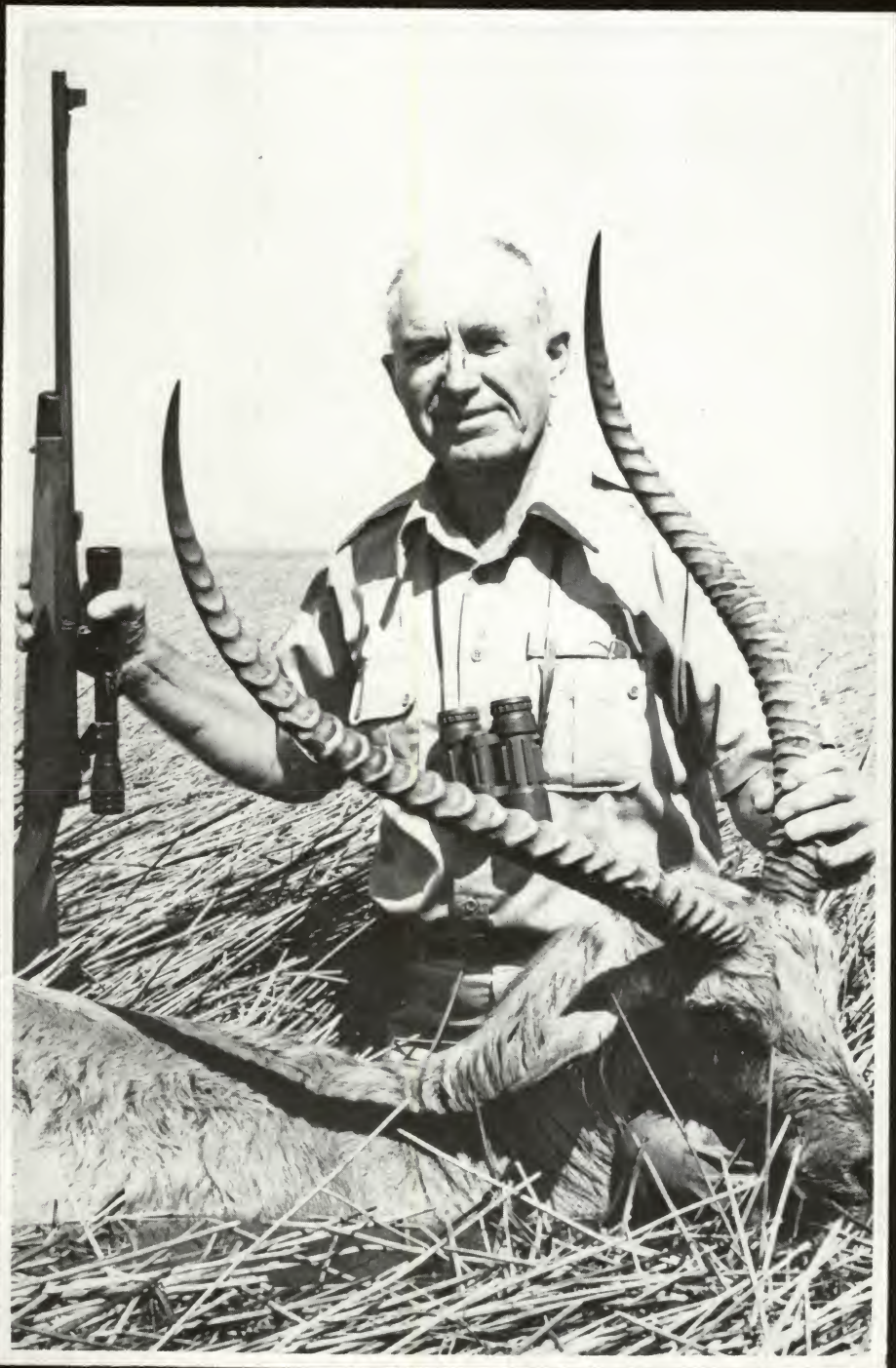
## *"Let Me Die Working"*

*Let me die, working.  
Still tackling plans unfinished, tasks undone!  
Clean to its end, swift may my race be run.  
No laggard steps, no faltering, no shirking;  
Let me die, working!*

*Let me die, thinking.  
Let me fare forth still with an open mind,  
Fresh secrets to unfold, new truths to find,  
My soul undimmed, alert, no question blinking,  
Let me die, thinking!*

*Let me die, laughing.  
No sighing o'er past sins; they are forgiven.  
Spilled on this earth are all the joys of heaven;  
The wine of life, the cup of mirth quaffing.  
Let me die, laughing!*

*"Home is the sailor, Home from the sea,  
And the hunter home from the hill."*



JOYCE W. HORNADY

1907-1981

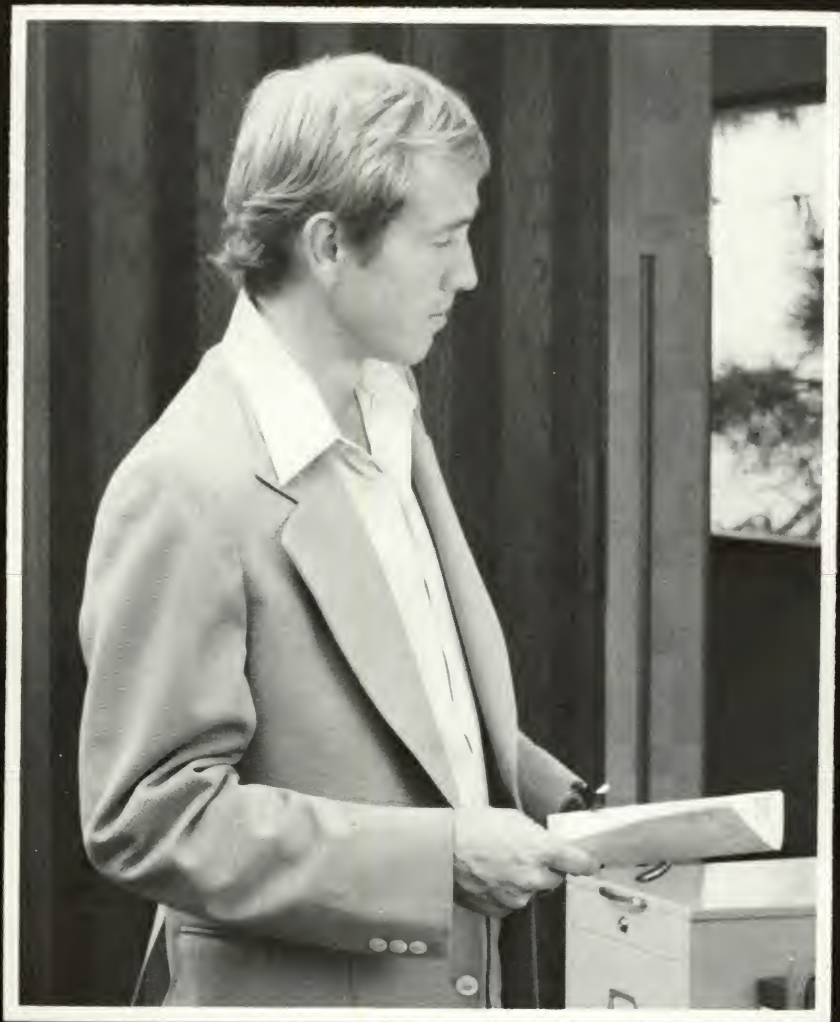




*Ed loved to hunt and shoot, always keenly intense when competing. But shooting was more than just hunting or competing; to Ed, it signified precision, quality workmanship and ingenious design, qualities exemplary of his lifestyle. He hunted squirrels in the sandy creek bottoms of Nebraska with an old English rook rifle, and the trophies of modern competition with an experimental pistol of his own design. He worked countless hours on seemingly impossible designs, and grinned impishly when they worked flawlessly. His deliberate style, unfailing good humor, gentle wit . . . We will miss him forever.*

**EDWARD A. HEERS**

**1946—1981**



*Jim had an infinite supply of enthusiasm and an infectious personality that made him everyone's friend. He genuinely liked being with people, and his sincerity and obvious interest in them, put them at ease in his presence. It is difficult to describe the respect and love that Jim had for nature. His fondness for quail hunting appeared akin to obsession, but it was just being outdoors that drew him there. He would carry a 28 gauge double barreled shotgun, because it was not the kill, but the hunt and the perfection of the shot. Yes, we think of him now, and it makes us sad; but then we think of all the times he made us smile.*

**JAMES W. GARBER**

**1952—1981**



*Hornady Handbook  
of  
Cartridge Reloading*

**Rifle-Pistol  
Third Edition**

**Hornady Manufacturing Company**

Grand Island, Nebraska 68801

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**HORNADY MANUFACTURING COMPANY, INC.**

GRAND ISLAND, NEBRASKA

U.S.A.

**FIFTH PRINTING 1985**

All loading data contained in this book is the result of testing by the Hornady Manufacturing Company. Under carefully controlled conditions and with the components and test equipment specified, this data proved safe in our testing. Since the Hornady Manufacturing Company has no control over the components and equipment which may be used with this published information, no responsibility is implied or assumed for results obtained through its use.

Lithographed in The United States of America



## FOREWARD

Hornady Handbook III was designed for all reloaders, experienced or novice. With over 100 different Hornady bullets for rifle and pistol ranging from 17 to 45 caliber, accompanying data for new, old, wildcat, and many obsolete calibers, data for many of the popular European calibers, and a myriad of powders from which to choose, the hand-loader has the basis for reloading the widest selection of calibers offered by any reloading manual in the industry. This manual includes information on primers, powders, cartridge cases, and how variations in components affect the results of reloading. Sections that provide special tips and techniques for reloading, problem solving, and problem prevention are also presented in this edition. New ballistics tables have been added that include trajectories for long range rifle competition, metallic silhouette shooting (both pistol and rifle), and short range pistol shooting. Also new, are tables that provide corrections for wind drift and for shooting uphill or downhill. Another new feature that enhances reloading is the section on bullet information. This section provides illustrations of all bullets as well as their sectional densities and ballistic coefficients; it also provides practical velocity ranges for optimum performance for all bullets within their applicable areas of use.

To compile a manual encompassing so many aspects of reloading required the services of many talented people. The writing, editing, testing, and photography of Hornady Manual III was done primarily by two individuals from the Hornady Lab: Ron L. Reiber, Author and Editor, and Edward A. Heers, Project Engineer.



Also a great deal of credit goes to all the employees at Hornady Manufacturing Company for their years of dedicated work which has produced our fine products.

In addition, Hornady Manufacturing wishes to thank the following manufacturers who contributed components and firearms for testing.

DuPont Explosives Products	Powder
Hercules Powder Co. Inc.	Powder
B. E. Hodgdon Powder Co. Inc.	Powder
Marlin Firearms Co.	Rifles
Norma Precision	Powder
Barrett J. Obermeyer	Pressure Barrels
Remington Arms Co.	Pistol
Thompson Center Arms Co.	Contender and Barrels
Weatherby's	Rifles

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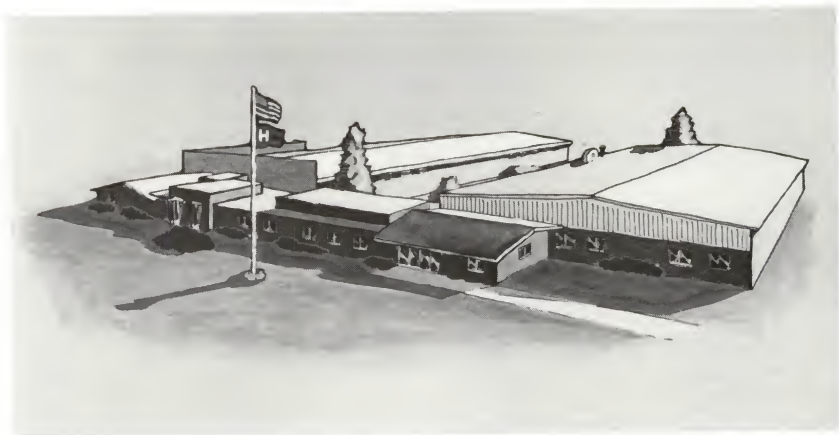


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## HORNADY MANUFACTURING COMPANY

The period following the end of World War II was the beginning of the greatest growth in reloading since the 1920's. From 1947 to 1949 shooters and hunters began drawing upon the vast surplus of military ammunition. However, military ammunition did not offer the accuracy and performance required for big game and varmint hunting.

Joyce Wright Hornady was born in Nebraska in 1907, the third child of a Methodist minister. He grew up in the days when personal resourcefulness and hard work were the keys to success. During his early years of hunting jack rabbits and prairie dogs on the Nebraska prairies, Joyce developed a strong desire to improve the accuracy and performance of the bullets of that time. His first bullets were made by redrawing 22 rimfire cartridge cases into jackets for varmint bullets. Later he purchased a surplus Waterbury-Farrel bullet assembly press, which vastly improved the quality of his bullets. His initial offering in 1949 was a 30 caliber, 150 grain spire point, one of the most popular bullets ever produced.

That first year yielded a total sales of a whopping \$20,000, hardly enough to support the four employees and still build a company. With borrowed money, more production equipment was added and more bullets introduced; Hornady Manufacturing was on its way, only to run into another obstacle, the Korean War. The shortage of raw materials caused by the war virtually brought to a halt the growth of the fledgling company. During this time the company produced a wide

range of products not associated with bullets, products like aluminum hearts for bracelets and condenser cans for the U.S. Government. At the conclusion of the war, the excess allotment of material for the condenser cans became the ultra thin jackets of the Hornady SX varmint bullets.

Further introduction of new bullets for different calibers eventually forced the company to move production from its location in a rented garage to an all new factory on the edge of Grand Island, Nebraska. A new addition in the early 1960's provided a 200 yard underground tunnel for extensive ballistics testing, a facility necessary for creating bullets that would yield the best accuracy and reliable expansion. The testing, utilizing Army research on bullet shapes, lead to the introduction of the secant ogive bullet, the most ballistically efficient shape. Until the development, all pointed bullets had a pencil point shape which was accurate, but not very attractive. The secant ogive retained the long bearing surface of the older bullets, but added the streamlined secant radius that still remains on all Hornady rifle bullets.

By the mid 1960's the Hornady bullet line included bullets from 22 caliber up to 45 caliber .458" diameter bullets. At this time, Hornady was a solid company, well respected in the industry for its quality products.

To expand its market to hunters who were not reloaders, Hornady introduced the Frontier line of ammunition. The first loaded ammunition consisted of just five cartridges, the only popular cartridges that could be formed from fired military brass. Again war interrupted the company's growth, this time Vietnam, creating a shortage of military brass, which eventually lead to Frontier loading ammunition with new brass. This removed the former limits of production and enabled the addition of other calibers, including handgun ammunition. Frontier, though relatively small, has also earned a well deserved reputation of excellence. It has produced ammunition with the same dedication to performance that has always been the standard of Hornady bullets.

By 1971 Hornady had become the largest independent manufacturer of bullets in the world, and the expansion in the market place started by Frontier was carried over into the purchase of Pacific Tool Company. Joyce felt the old line producer of reloading tools would be a natural complement to his bullets. Pacific had originated in California, producing gunsights, and had invented the "C" type metallic reloading press in 1928, which began the modern era of reloading. Pacific began a slow decline until they were purchased by investors and moved to Lincoln, Nebraska. New products were introduced, and the first really practical shotshell loading tools were then manufactured. Pacific

began to stabilize, but bad luck and poor planning nearly drove the company from existence, until it was rescued and became a part of the Hornady Company. With the name behind it, Pacific began to regain customers and add new business. The original building in Lincoln was soon outgrown and Joyce decided new facilities should be located next to the Hornady plant in Grand Island. The new location allowed closer control of the company and combined efficiencies in shipping and management. The move was completed by late 1972, and at the same time a building was built for Western Gun and Supply, a wholesale distributor. Two major events took place following the construction. The first being the introduction of the 105 shotshell loader, the first truly inexpensive press for the beginning reloader. The 105 initiated a strong growth in Pacific and in shotshell reloading itself. The second event was the decision to close the distribution business, because Joyce felt that operating a wholesale business was competing with his own customers.

Throughout the 1970's the Hornady companies continued to expand the already wide selection of products for the shooters of the world. Innovation and continued effort were the keys to success for Joyce Hornady, who continually tried to improve his line of products. Boat-tail hunting bullets were entered in the selection and new pistol bullets for the rapidly growing pistol sports were added. The InterLock bullet was developed to improve the performance of a bullet with an already outstanding worldwide reputation. The 366 shotshell tool was upgraded to offer more automatic features, while keeping the price within the reach of the average target shooter. In 1979 the 0-7 press, the first of a series of new products, was introduced. The 0-7 combined the strength of the 0 frame press with modern materials, and completely new priming system that won the American Firearms Industry award for Outstanding Achievement in 1980.

In January 1981, Joyce Hornady, Edward Heers, the young engineer who developed the 0-7 and the 00-7, and Jim Garber, Customer Service Manager, were killed when the company plane they were flying crashed enroute to New Orleans. Joyce Hornady was always active in the development and operation of the company he founded. During the years, he hunted North America for varmints, deer, elk, bear, sheep and more, constantly testing his product, assuring himself that he was producing the quality product for which he was renowned. His last three years of hunting took him to Africa, to test the new InterLock bullet and to prove to himself that it really was a superior bullet. Joyce cared about the shooters and the products that carried his name.



*Joyce Hornady  
on Reloading  
and Bullet  
Accuracy*



*This section of the new Hornady Handbook has been adapted from the full-color, 16mm, short-feature length film "Joyce Hornady on Reloading and Bullet Accuracy". Directed and filmed by the well-known producer Roger Barlow, the movie has been widely acclaimed by shooters and non-shooters alike. It is available at no charge for viewing by clubs, associations, and private shooting groups by writing Hornady Manufacturing Company, P.O. Box 1848, Grand Island, Nebraska 68801. Should you wish to schedule this film as part of a club or reloading clinic program, we urge you to reserve it well in advance of the program date. A \$10.00 deposit is required before the film can be shipped, and this deposit is refunded when the film is safely returned.*





The accuracy with which he can place each shot is of prime importance to any shooter.

Patience and skill are vital to successful shooting, but they alone cannot achieve accuracy. Whether you are a varmint, big game hunter, or a target shooter, you also need good equipment and ammunition if you're to put each shot where you want it to go.

Accuracy is the theme of this section of the new *Hornady Handbook*; what accuracy is, where it comes from, and how the shooter can obtain more of it. An inaccurate rifle, like a leaky boat or a bird dog that habitually false points is something we're better off without. What we'll demonstrate in the following pages, however, is that it's possible for the shooter to do something about accuracy problems if he understands their origins and takes the right steps to correct them.

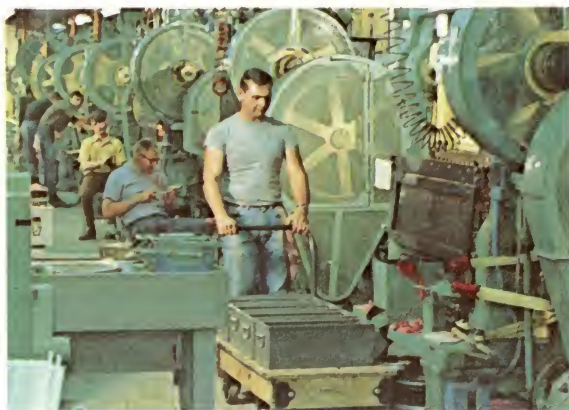




I'm Joyce Hornady. You might say accuracy is my business — and has been for the more than 30 years I've been making bullets.

Accuracy doesn't just happen, You have to *make* it happen through minding those few thousandths or ten thousandths of an inch and tenths of a grain which spell the difference in the final test; your own shooting. The people who are Hornady Manufacturing not only mind those minute variations in tolerances, they also apply quality standards unparalleled in the history of our firm.

The original manufacturing facility for Hornady Bullets was opened in 1949 — and it looked far different than the scenes you see here of today's operation. Just as the old plant and equipment would look primitive in comparison with today's modern machine tools and





production presses, so old standards for acceptable bullet accuracy would seem primitive in comparison with those in use today. Our production standards have improved because we've *made* them improve — by learning the "secrets" of accuracy through hard work and then by applying newfound knowledge to the manufacturing task.

Accuracy is the business of every Hornady employee; and with over 200 man-years of experience in this business we've learned quite a few of the secrets involved in building accuracy into our products so you can use them successfully. The kind of accuracy we're talking about isn't something easily come by and it isn't found anywhere in the world in its pure state. It must be earned, by the manufacturer as well as the individual shooter.



The target (below, left) is the sort of 200 yard group a good many shooters get; and as you can see, hitting a prairie dog at that range would be pretty much a matter of good luck rather than good shooting. Even most woodchucks would be missed or only wounded.

Varmint shooters really do need better accuracy than this — and they can get it. Our next target shows what we mean by “varmint accuracy”. It, too, has been fired at 200 yards — but from a really good rifle, properly bedded and having a smooth trigger pull . . . and shooting handloads carefully made from selected fireformed cases, the right powder load and the best possible bullets seated to the right depth.

Factory ammo is, and must be, manufactured to specifications which will insure its functioning satisfactorily despite a wide range of chamber tolerances in a variety of bolt, slide, lever, autoloading, and single shot rifles . . . both domestic and foreign. Factory ammunition must necessarily forego some accuracy potential for the individual rifle, to perform satisfactorily in all the different rifles in which it may be used.

Handloads, however, can be made up for the individual rifle and its chamber *without* compromises and so can bring out its best capabilities. The half to three quarter minute of angle group shown in our second target means that if our shooting skill is up to it, prairie dogs can be consistently hit at 200 yards or more and that woodchucks can be cleanly killed at 300 to 400 yards.







Handloading your own ammunition — ammunition of excellent quality, custom tailored to your own rifle, and your own shooting needs — could hardly be easier or safer. It requires only four different components (empty once fired cases, primers, powder, and bullets) and this basic equipment: a powder measure, scales, a reloading press, a set of dies, some case lube, and a loading manual. Elsewhere in this book we present detailed step-by-step procedures for reloading rifle and pistol cartridges — plus most of the data required by both the beginner and the experienced reloader, regardless of the caliber of gun or type of target for which he's loading. Our purpose here, however, is not to teach you these basic steps in reloading but rather to help clarify certain aspects of shooting and reloading which are frequently unknown or misunderstood. The more secure your knowledge of these complex factors, the better will be your chances of obtaining the ultimate in accuracy and performance from your firearm and ammo.

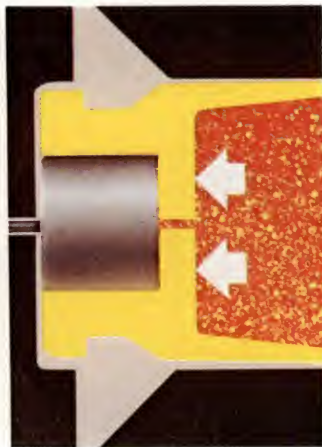
To explain what actually happens in the chamber of a rifle when it is fired, how the case and bullet are affected, we will employ illustrations which exaggerate clearances which would otherwise be difficult to see.



The rimless cartridge shown here (above) is a new factory round which fits the chamber rather loosely; its bullet is not in perfect alignment with the bore; and the case doesn't contact the front of the chamber (right).

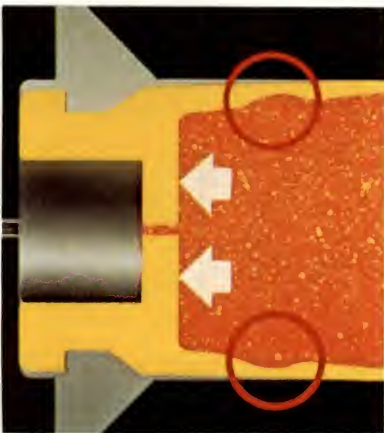
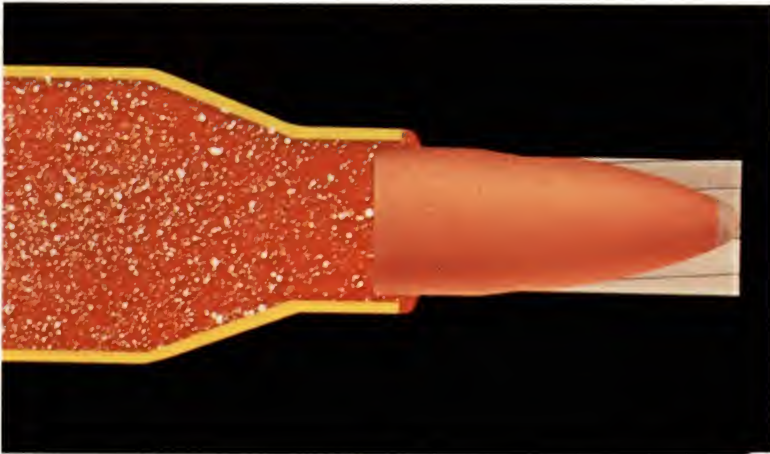
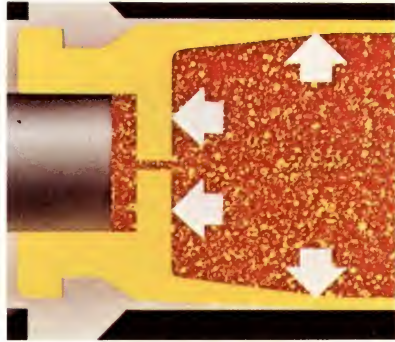


As the firing pin strikes, it moves the case forward to contact the front of the chamber (below, left), giving a little headspace (below, right) — but not a dangerous amount.



Notice that the violence of its flash backs the primer part way out of the pocket (right) — and as the powder is ignited and pressure builds up, the brass case expands to fill the chamber completely (below), preventing any escape of gas to the rear.

As the pressure continues to build, the case is forced so tightly against the chamber wall that it



cannot move; but since we had a gap between the base of the cartridge case and the face of the bolt or breech block — what we termed a little headspace — the case itself must stretch in the head region circled to force the case head back.

As the case is moved rearward the primer is resealed in its pocket, when the bullet exits up the barrel the pressure drops, the case cools, and the brass contracts enough to permit extraction of the



fired cartridge case from the chamber (below).



The concept of headspace is one every shooter should understand fully, both in the interest of more accurate shooting and personal safety. In the Illustrated Glossary at the back of this manual we summarize four different headspacing systems and define the term very simply as "the fit of a cartridge in a chamber measured as the distance from the breech face to that part of the chamber which stops the case's forward movement". As we have just seen with this rimless case, an imperfect fit of the cartridge in the chamber will result in case stretching in the critical head region. Fired in a chamber having considerable headspace, this 308 Winchester case (below, left) has had its wall thickness substantially reduced at the critical head region — and would almost certainly have separated on the next firing — as did this case (below, right). Such a rupture might permit gas to escape rearward through the action, endangering the safety of the shooter.



Next we'll illustrate another type of case with a different headspacing system; the rimmed case. When the primer in this case is struck by the firing pin (right), the case itself cannot move forward appreciably because it is the *rim* and not the shoulder which stops its forward movement and thus positions it in the chamber. As the powder is ignited and pressure builds inside the case, its thin walls readily expand to contact the chamber; but because the rimmed head is virtually in contact with the bolt face or breech block the case (below, right) will not stretch as much in the critical head region as did the rimless case we first illustrated — unless the action used is an exceptionally weak one.

The belted case — often used in so-called "Magnum" cartridges — is a third type of design frequently encountered. The "belt" is in effect a rim moved to the front of the head rather than being at the rear. When this type of cartridge is struck by the firing pin it is moved forward only slightly, regardless of the space at the shoulder. When it has been fired (right) there is very little stretch in the critical head region; however, if headspace is not close the case will stretch just above the belt.



A cartridge case plays a demanding role in the process of firing. It must contain hot gases under immense pressures and seal the chamber to prevent their rearward escape. Despite safety features incorporated in modern rifle actions, case failure resulting from faulty headspacing poses possible dangers to the shooter. As we'll show, the careful reader who understands the concept of headspace can take steps to minimize the risks of case separation.

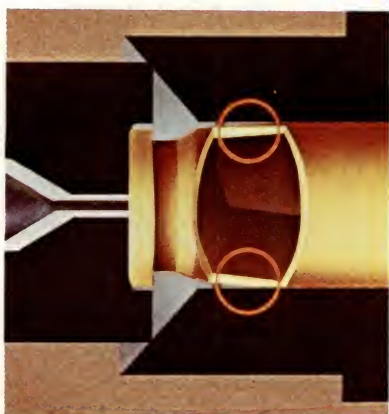
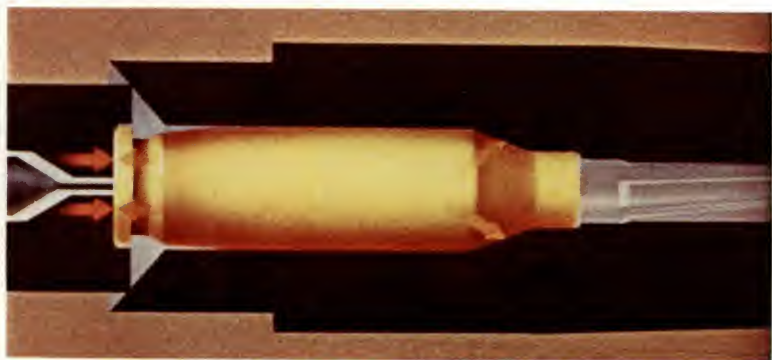
To review our discussion up to this point, we've established that factory ammunition, manufactured to function in a wide variety of actions and chambers of varying dimensions, will be an imperfect fit in the individual rifle. The bullet will not necessarily be in perfect alignment with the bore; and the case will expand on firing to conform to the dimensions of the chamber when the cartridge is fired. If headspace is not close there will be some stretching or thinning of the case wall in the process.

But while our case conforms perfectly to the chamber in which it has been fired, one important dimension has been changed so that it cannot be reused as is: the case neck has expanded to release the bullet and is now too large to hold a new bullet securely. This brings us face to face with a decision which plagues and confuses many reloaders: whether they should full-length resize their cases, returning them to standard dimensions — or whether they should resize the necks only.

Let's examine the process of neck sizing to see what advantages it affords. Most cases can be neck sized in a normal full length die just by unscrewing it slightly, though a proper neck sizing die is preferred. Since the body of the case will not be worked in the die, it is not necessary to lubricate the full case. It is necessary only to dip the neck lightly in a dry lubricant, such as powdered graphite, to prepare for the resizing operation. A new primer, some new powder, and a new bullet get the case ready for reuse.

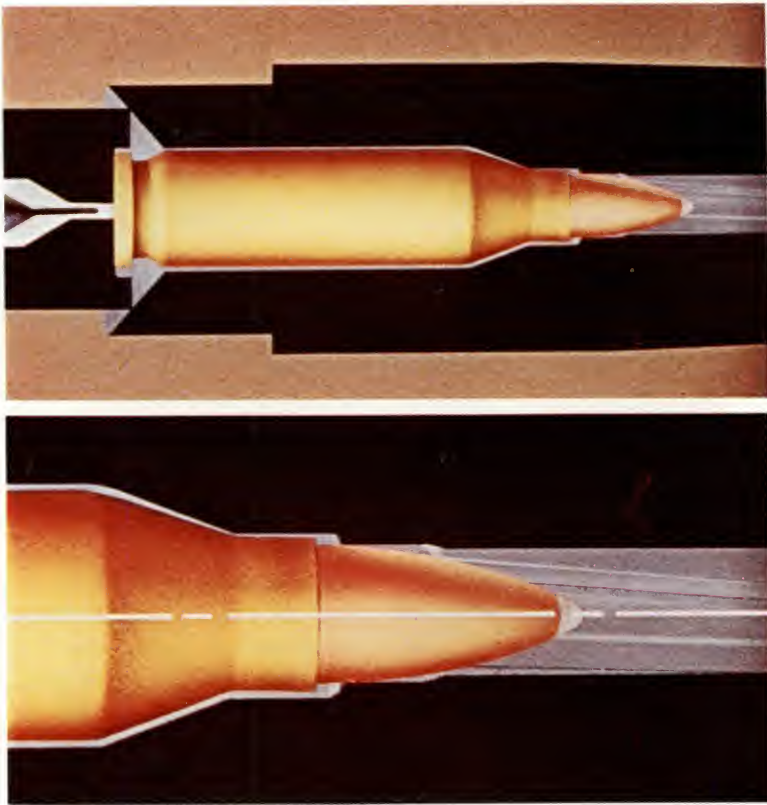
Though some rifles deliver their best groups when full length resized, neck sizing only usually promotes better accuracy, because when our reloaded cartridge is returned to the chamber it is almost a perfect fit; headspace is just right with *all* cases, whether rimmed, belted, or rimless; and most helpfully of all, the new bullet is almost perfectly aligned with the bore.





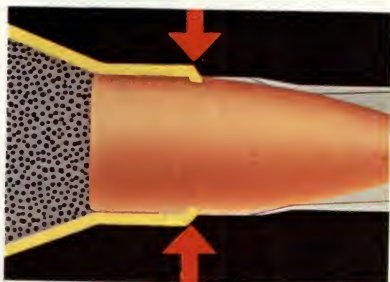
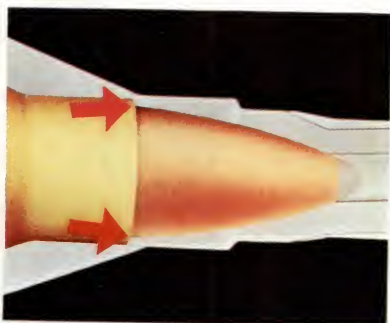
Observe what happens when this reloaded cartridge is fired: the striker does *not* drive the case forward because the shoulder is already in virtual contact with the chamber (above); and headspace is minimum. The case is not subject to stretching in the critical head region (left) as it was when fired originally.

Some reloaders may wonder why it would not be possible to adjust a full length size die to eliminate excess headspace and obtain the advantages we've just noted for the process of neck sizing only. To get the answer to this question we'll return to our cutaway illustrations. The full length sizing die, though adjusted for minimum headspace, "works" the brass, eventually making it flow into the neck area thereby lengthening the case (left).



When the reloaded cartridge is returned to the chamber, it doesn't have excess headspace — but it's almost as loose a fit as it was when brand new (above, top). One benefit full length resizing provides (if done with minimum headspace) is in aligning the bullet well with the bore (above, bottom), though some misalignment may still be possible due to case or chamber eccentricities.

Repeated full length resizing will keep lengthening the case until it must eventually be trimmed, possibly after only three or four rounds. The reasons for this are simple. The case body expands on firing; and its diameter is reduced in full length resizing. The brass displaced must go somewhere — and it does; it is pushed upward to lengthen the case.



When an overlength case is chambered, the mouth or edge of the neck will come up against the throat (top) before the bolt has fully closed or the case shoulder has contacted the chamber (upper middle). The camming action of the bolt is so powerful that it will actually crimp the case mouth fully into the bullet (lower middle) and wedge the case so solidly between the bullet and the throat that the neck cannot expand to release the bullet. Chamber pressures in this situation can and most certainly will go dangerously high (bottom).



There will be ample evidence to confirm the existence of dangerous pressure levels directly attributable to the overlength cases. The shooter may get belted sorely in the cheek; the bolt may have to be hammered open; and the case head may present clear indications of too much pressure (below, left). The primer will be excessively flattened; there will be a crater around the firing pin indentation; and brass may have extruded into the ejector slot.



If the case head is miked (above, right) it may show expansion — and even half of one thousandth of an inch (.0005") increase in the diameter of the case head is an indication of high pressure.

Case lengthening produced by repeated full length resizing will shorten case life. Continuous working of the cartridge brass between chamber and die stretches it, eventually producing cracks in the case and finally complete head separation. Hot loads, even if necks are trimmed as called for, speed up this process.

If optimum accuracy and prolonged case life are important to the reloader, our advice is to neck size only whenever practical. There are, of course, situations in which it is advisable to full length resize. Shooters reloading for pumps, lever actions, and autoloaders must do so to facilitate reliable chambering. A lever action, for example, doesn't have the powerful camming action of a bolt action and may not easily chamber cases larger than factory standards. Shooters who reload cases from one bolt action for another will also find it necessary to full length resize. Even shooters reloading for only one bolt action will occasionally need to full length resize for the sake of easy clearance; over repeated firings the case may conform more and more tightly to chamber dimensions, making chambering and extraction increasingly difficult.

While the issue of cartridge case to chamber fit is of vital importance to the subject of accuracy, bullet seating has a considerable effect on accuracy in many rifles — and on pressure and velocity as well.

The section ahead of a rifle's chamber just before the rifling starts (below) is called the "leade," throat, or "freebore" and is really the bore of the barrel with the rifling reamed away. As our bottom three illustrations show, it varies considerably in length and in the angle at which

the rifling is cut, depending on the views of different factories, cartridge designers, and barrel and gun makers. Normally it is quite short and the rifling starts perhaps only a 32nd of an inch from the bullet; but in some rifles the freeboring might allow over half an inch of bullet travel before it contacts the rifling firmly.



To illustrate the effects of variations in bullet travel before the bullet enters the rifling, we'll compare a standard load with adjustments made only in the bullet's seating depth.

In a "normal" load with the bullet seated to allow about a 32nd of an inch gap (A) between the bullet and the initial contact with the rifling, pressure builds very smoothly and steadily even as the bullet takes the rifling. Pressure remains safe throughout the powder burning period (B), and the velocity obtained — 3500 fps — is "normal" for this load in this rifle.

Seating the bullet deeper to allow more travel before it takes the rifling, as in these next two illustrations, permits the bullet to get a good running start (C). Powder gases quickly have more room in which to expand without resistance, and their pressure thus never reaches the "normal" level. Nor does the velocity; with the same powder charge it only comes to 3400 fps (D).





When the bullet is seated to touch the rifling, as in the accompanying illustrations, it does not move when the pressure is low (E); and not having a good run at the rifling as did the other bullets, it takes greatly increased pressure to force it into the rifling. As the now rapidly expanding gases now find less room than they should have at this time in their burning, the pressure rise under these conditions is both rapid and excessive (F). Velocity is high at 3650 fps — but at the expense of rather dangerous pressure.



Many rifles deliver their best groups when bullets are seated just touching the rifling. Seating bullets thus can be done quite safely if the reloader will reduce his charge by a few grains. The lighter load will still produce the "normal" velocity without excessive pressure.

This brings up another pointer on accuracy for shooters who may have a few thousand rounds through their rifle barrel and have noted a fall off in the accuracy they can obtain with their standard loads. Hot gases from the shots previously fired through the barrel erode the throat and thus increase the distance a bullet must travel before contacting the rifling. By loading longer bullets and seating them farther out so they'll touch the rifling — making powder charge adjustments as necessary, of course — accuracy can often be improved.

The number of factors affecting the performance of a cartridge is remarkable; we've looked at the cartridge to chamber fit; alignment of the bullet with the bore; the depth to which a bullet is seated and the amount of travel it undertakes before contacting the rifling. The primer, a component many reloaders take for granted, may influence performance if it's not up to the task of igniting densely packed smokeless powder. Some powders burn more uniformly than others and contribute to better accuracy.

The firearm itself may be the cause of inaccuracy if the muzzle is burred, if the throat is eroded in the barrel, or if the trigger is so jerky the shooter can not maintain his hold from shot to shot. The stock and action must be properly bedded to maintain a uniform fit or inaccuracy may result. Even this list does not exhaust the possible causes of poor accuracy.



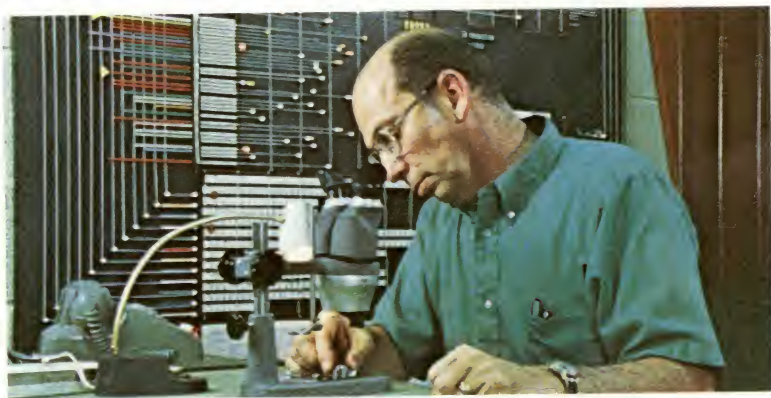
A continuous test program is employed to check on our production quality. Our laboratory is equipped with the finest test barrels available and with machine rests which eliminate human variables in shooting so that we can isolate shot-to-shot dispersion associated only with the bullets being tested.



The two targets shown in the accompanying photograph were made firing the same bullets tested on successive days. The small group met our accuracy standards and illustrates the kind of performance we demand of the product. The larger group was fired from bullets produced after the press making them developed only a few thousandths of an inch play in its cup feeding mechanism. This evidence of misadjustment brought the production to a halt so that the press's problem could be analyzed and corrected.

As we said earlier, accuracy doesn't just happen. You have to make it happen, by paying constant attention to these vital thousandths and ten thousandths of an inch. No matter how perfect the basic design of bullets may be, they aren't going to be consistently accurate unless we can make them all to closer tolerances than, say, a Rolls Royce engine.

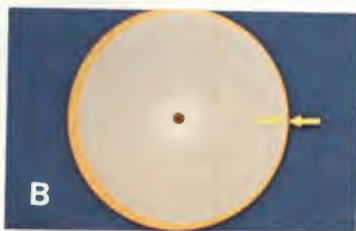
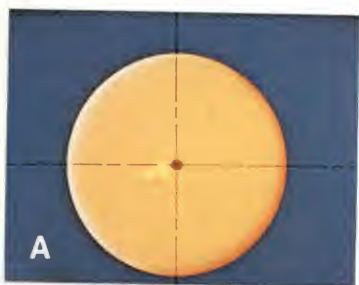




Perfect balance is perhaps the most critical factor in bullet accuracy. The attainment of this goal is the major responsibility of C. J. Schreiber, Chief Engineer for Hornady Manufacturing.



Chuck has the task of designing production machinery which will maintain near-perfect concentricity in the copper cups from which our jackets are formed in various punch presses. Not only are there multiple steps through which our gilding metal must pass on its way to becoming a finished jacket, the concentricity problem is compounded by our need to internally shape the jacket to control expansion in our hunting bullets (right, above). If the finished jacket is not of uniform thickness around its entire circumference, if it varies by even so little as five ten thousandths of an inch, the resulting bullet will be unbalanced sufficiently to veer from its intended line of flight.



In the accompanying drawings we will let the green dot represent the center of form of this bullet, a point at the actual dimensional center of the bullet. The red dot indicates the center of gravity of the bullet; both of these points should coincide exactly (A).

But because the jacket of this bullet has a thinner wall on one side, there is more lead there (B) and the center of balance is moved ever so slightly in the direction of the heavier side, perhaps less than a thousandth of an inch (C).

As long as the bullet is in the barrel it rotates around its center of form (D) but when it leaves the barrel it spins around its center of gravity (E) and this causes it to veer slightly off its intended course at a tangent to the spiral described by its center of gravity as it went up the bore.

Less than half a thousandth of an inch error in jacket concentricity can and does have a detrimental effect upon a bullet's course. And because we cannot chamber each bullet with its center of gravity similarly aligned in the barrel, subsequent shots will diverge at arbitrary angles . . . slight though they may be. The final result is a group with more dispersion than we would like.

It is only by minding all those ten thousandths of an inch and tenths of grains in all stages of production that we are able to make millions of bullets capable of exceptional accuracy and in a variety of calibers having expansion characteristics suitable for target, varmint, and big game hunting.

We believe shooters need and want the kind of accuracy we've discussed in this short essay. That's why the people at Hornady Manufacturing take accuracy so seriously. The effort to produce accurate bullets, to *make* accuracy happen, is a joint effort involving many individuals, their skills, and their dedication to the final goal.

Doing your shooting with super accurate and effective cartridges which you yourself have loaded not only provides more shooting for your money but *better* shooting. The accuracy factors that we discussed early in this essay have indicated why it is possible to make better ammunition than you can buy.

But reloading can also give the shooter an invaluable sense of pride in his own craftsmanship. It's the same pride that we at Hornady Manufacturing share in producing quality products which can be used confidently and effectively.



# *Introduction to Reloading*

## INTRODUCTION TO RELOADING

The beginning reloader should not start reloading until he has read and digested the sections mentioned in the following paragraphs. Safety should be foremost in the mind of the reloader, and safety comes from a sound knowledge of reloading and patience at the reloading bench.

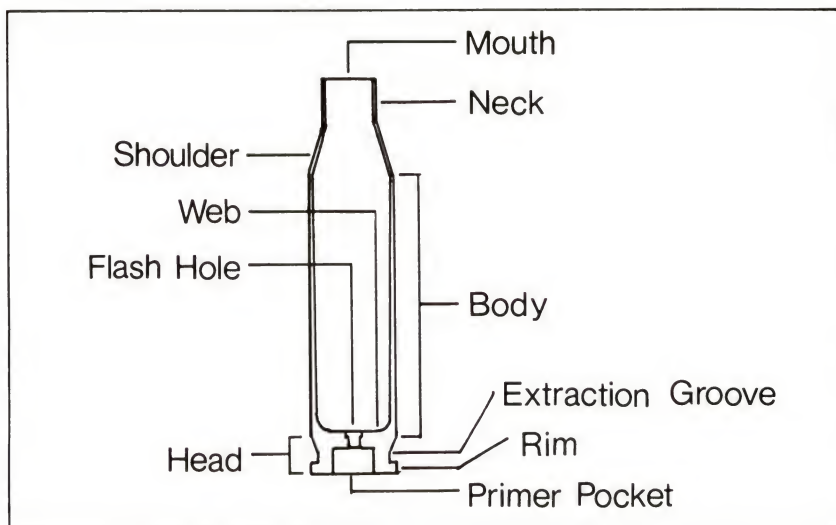
The following section is an introduction to reloading meant primarily for the beginning reloader, but with helpful hints and refresher ideas for even the experienced reloader. It includes information on the components of a cartridge and basic fundamentals of reloading. Succeeding the introductory material is the rifle reloading data which provides loads for all available Hornady bullets, and encompasses all types of shooting situations. Then on page 309 the operation of reloading is repeated for the pistol shooter, since some of the equipment and techniques vary enough to make another discussion of the operations worthwhile. Again, loading data succeeds the introductory material, only this time, pistol data. Immediately following the pistol reloading data is a section titled "Problems, Tips, Techniques and Tools for the Reloader". After the reloader has read about the basic techniques of reloading, this section supplies added information valuable in becoming an experienced reloader; it deals with problem areas, special techniques for bench rest accuracy, and precise tools that assist in obtaining this accuracy. The last section of the book provides ballistics tables that cover the wide ranges of use of Hornady bullets, with charts and tables that give information on wind drift, uphill/downhill shooting, boxer primers, all brands of shell holders, Metric/English conversion factors, Pacific pistol powder measure bushings and Pacific case trimmer pilots.

With all this information available and the numerous safety factors concerned, the reloader should remember one most important rule: Never begin development of a load by starting with a maximum or near maximum load; always start at the beginning increment listed in the loading data, and work up to a maximum charge by watching for pressure signs.

# *The Components of a Cartridge*



The components of a cartridge are cartridge case, primer, powder and bullet. The following definitions are designed to give the beginning reloader better insight about the fundamental processes of reloading.



### THE CARTRIDGE CASE

Normally the cartridge case is made of brass, a malleable metal alloy which provides the reloader with a case that can be resized and reloaded repeatedly; cases may be loaded as many as twenty times, depending on proper care and the type of action used. A few military cases can be found that are made of steel, plated with zinc or lacquered. The terminology used in describing a cartridge case is illustrated in the diagram above.

There are five types of cartridge cases: rimmed, rimless, semi-rimmed, belted, and rebated. The following are examples of each of the five types.



Headspace is a term that describes the fit of a cartridge in a chamber and is measured as the distance from the breech face of the bolt to that part of the chamber which stops the case's forward movement. Insufficient headspace can result in the cartridge being unchamberable. Excessive headspace allows the cartridge case to stretch and separate, thus creating a dangerous situation for the firearm and the shooter.

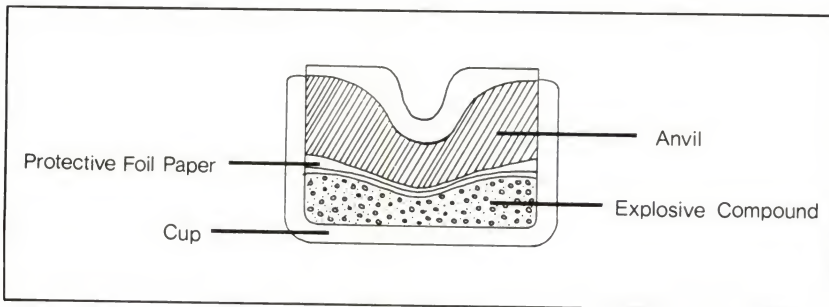
A rimmed case has a flange on its base, and the rim acts as both means of headspacing and extraction. Rimmed cartridges are most popular in lever action rifles and combination guns.

The rimless cartridge case is the most popular, mainly because the rim and case head are nearly identical in diameter, which allows smooth and easy functioning through magazines of bolt action rifles. Another "plus" arises because this type of cartridge can be used in most any type of action. Headspace of the rimless case is regulated by the length from head to shoulder.

Few cartridge cases of the semi-rimmed version are used today. Two examples of the semi-rimmed cartridges in the United States are the 225 Winchester and the 220 Swift. This cartridge case has a rim slightly larger than its body diameter, and the extraction groove is not cut as deeply as on the rimless version. Headspace is done as on the rimless case, from head to shoulder on bottlenecked cases and from head to case mouth on straight walled cases.

The belted cartridge case is mainly found in the large magnum configuration. This case features a raised belt just ahead of the extraction groove, and the headspacing is measured from case head to the front of the belt.

The final type of cartridge case is the rebated case of which the 284 Winchester is representative. This cartridge case has a body diameter larger than the rim with headspace controlled by head to shoulder length.



### PRIMERS

As is illustrated above, the structure of a primer is quite simple. The primer cup with primer compound is covered by a paper foil disc. On top of the paper disc is the anvil. When the firing pin strikes the primer cup, the compound is crushed against the anvil and is thus ignited.

Primers for rifles and pistols differ in a structural size and in the

amount of priming compound. Both rifle and pistol primers come in large and small sizes with their diameters being .210" and .175" respectively. Pistol primers have the same diameter, but that is where the resemblance ends. Rifle primers have greater cup thicknesses and larger amounts of explosive compound, while pistol primers incorporate thinner cups because of lighter hammer or stricker fall and normally lower working pressures. The greater amount of explosive compound is necessary for rifle primers because of the larger quantities of powder that must be ignited. Large rifle primers have a greater overall height than pistol primers, and primer pockets in cartridge cases are made accordingly. Under most circumstances rifle primers and pistol primers should not be used interchangeably, as pierced primers and poor ignition can be the result.

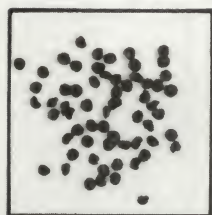
Storage and handling of primers is important in relation to primer efficiency and the life of the primer. If primers are stored in a cool, dry place with stable temperatures, the life of the primer is indefinite. Also, primers should remain stored in their original containers. Primers should never be stored in bulk. If primers are dumped in jars or cans, the possibility of accidental detonation due to friction or static electricity could cause an explosion of enough magnitude to be quite hazardous. A common nemesis to primers is handling with oily hands. The slightest amount of oil in the explosive compound can completely inactivate a primer or cause hangfires.

Proper seating is of great importance if uniform ignition and good accuracy is expected. If a primer is seated to gain maximum sensitivity, the primer compound should be slightly compressed between the cup and anvil. The cup should firmly contact the bottom of the primer pocket. When this occurs, the primer will be slightly below flush with the case head. However, if the primer is not properly seated, the firing pin cannot strike the cup with enough force to contact the anvil; since uniformity here is not likely, poor ignition or even misfires can occur.

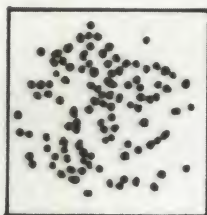
Magnum primers have the same dimensions as other primers except the content of explosive compound is greater and of slightly different chemical structure. Also, the thickness of the cup can vary. Generally speaking, magnum primers for rifle cartridges are used with most slow burning ball and extruded powders in large capacity cases. In handgun cartridge cases, magnum pistol primers are normally used in conjunction with slow burning powders such as 296, H110, and 4227 in magnum cartridges.

A primer commonly found in European cartridges is the Berdan primer. This primer has no anvil, but uses a protrusion incorporated in the cartridge case for the purpose. One or two flash holes are present on either side of the built-in anvil. Decapping Berdan primed cases cannot be accomplished with regular decapping tools; a special tool is required with the process becoming quite tedious. It is for this reason that the Berdan primer is not popular in the United States.

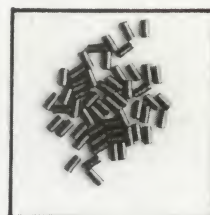




FLAKE



BALL



EXTRUDED

### POWDER

The above illustrations typify the common forms of modern smokeless powders available to the present-day reloader. The chemical composition of the three types is classified as either single base or double base. The primary make-up of single base powders is nitro-cellulose. Double base powders have nitroglycerine added which enables powders of such composition to develop more energy per unit weight with only slightly more erosion. Most Hercules and Winchester powders are double base while most DuPont powders are single base.

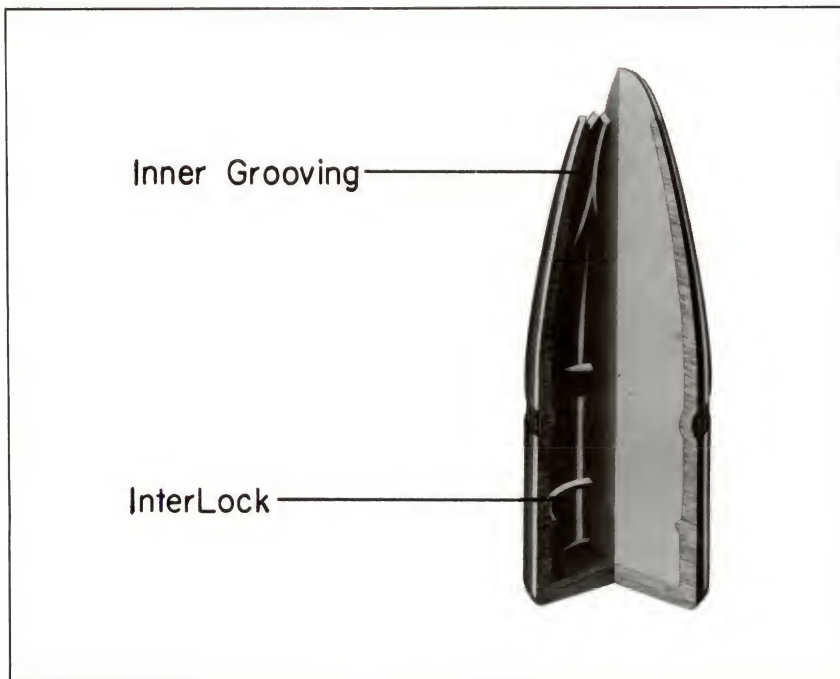
Modern smokeless powders are more stable and more convenient to use than the black powder used in the early days of firearms. Black powder is easier to ignite and is subject to detonation due to shock from a sudden jar, whereas smokeless powder is not. The development of modern powders has seen the creation of compounds called surface deterrents that reduce flame temperature, and in turn, create less erosion and extend barrel life. In many powders, a deterrent coating is added that aids in burning rate control. Most powders have additives that lessen muzzle flash and add longevity to the shelf life of the powder. In fact, through proper storage procedure, the shelf life of modern powders is practically indefinite. With the vast improvement in smokeless powders, powders of various burning rates from very fast to very slow have been developed to meet every sporting need.

For proper storage, powders should be kept in a cool, dry location with even temperatures. Powders should not be transferred from factory containers to glass or plastic jars, as light speeds decomposition of smokeless powder. Deterioration of powder is noted by a brown, rusty colored dust that appears on the powder granules. Deteriorated powder is subject to spontaneous combustion and should be discarded. From the standpoint of safety, the sole use of factory containers is necessary because there are many powders that look alike, but have greatly different burning rates.

## BULLETS

A rifle is only as good as its components. With any inferior component, a rifle's accuracy and usefulness suffers. We at Hornady strive to make a vital component, the bullet, free of defects and capable of the best possible accuracy. With our excellent quality control standards and the widest selection of bullets available, we feel proud and certain of providing the best bullet for each individual's shooting situation.

Our bullets must adhere to strict tolerances in order to maintain the accuracy levels for which they are noted. Concentricity tolerances of the jackets of hunting bullets must be less than .0005" and match bullet jacket tolerances must be less than .00025". The weight standard is  $\pm 3/4$  of 1% of the total designated weight for any given bullet. Diameter variation of a bullet must be no greater than + .0003" maximum dimension and no less than - .0002" minimum dimension. Before any given lot of bullets can be run, samples of the run must be shot in machine rests for accuracy. Match bullets are fired at 200 yards, while hunting bullets are tested at 100 yards. As an example, we require that group sizes for 22 caliber varmint bullets be under .350" for five shot groups at 100 yards; it is not uncommon to have various lots run under .250".



Included in all cannelured rifle bullets, excluding FMJ's and varmint bullets, is our new Interlock feature. This unique design prevents core slippage, and coupled with our exclusive Innergroove feature (found in all jacketed bullets except FMJ's and match bullets), maximum

weight retention with controlled expansion is the end result. It is common knowledge throughout the industry that jacketed pistol bullets shot at speeds below 1000 f.p.s. expand poorly. We at Hornady have incorporated our Innergroove feature in such bullets and are enjoying excellent results.

The following diagram illustrates the stages of production of a typical Hornady hunting bullet. It might be noted that minor changes occur in the design of different bullets, but basically, the process is the same.




















The beginning step (Stage 1) is performed in our cupping department. Here, various sized cups for each different bullet are formed. Stages 2 through 5 are drawing stages where the jacket is drawn to its assigned dimensional thickness. Also, at Stage 5 our Innergroove feature is added and at Stage 6, the exclusive Interlock feature is formed. At this point (Stage 7), a core is inserted followed by proper seating of the core (Stage 8). At Stage 9 a cannelure is added. Now, (Stage 10) the bullet is fed through a trimmer which trims the jacket to the exact length. At Stage 11 the bullet is pre-swaged. Next, (Stage 12) the bullet is sheared of excess lead and becomes the exact weight of the finished product. This is an exclusive process at Hornady that provides extremely close weight tolerance. At Stage 13, the bullet receives its final swage. Then the point is finished (Stage 14), and finally (Stage 15) the bullet is sized to the correct final dimension.

















Every Hornady bullet has been designed for specific areas of use; many bullets are more suited for a broader array of uses than others. It is for this reason that the following table has been constructed. We are not implying that each and every bullet should be used exactly as categorized, but that the information be used as a guideline to represent each bullet's best performance area.




















## BULLET INFORMATION

### RIFLE BULLETS

















Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
1710	17 Cal. 25 gr. HP .172" Diameter	.121	.190	Velocity 3200 - 4100 f.p.s. Varminting	
2210	22 Cal. 40 gr. JET .222" Diameter	.116	.100	Velocity 2100 - 2900 f.p.s. Varminting	
2220	22 Cal. 45 gr. HORNET .223" Diameter	.129	.191	Velocity 2200 - 3600 f.p.s. Varminting	
2230	22 Cal. 45 gr. HORNET .224" Diameter	.128	.191	Velocity 2200 - 3600 f.p.s. Varminting	
2240	22 Cal. 50 gr. SX .224" Diameter	.142	.220	Velocity 2100 - 3600 f.p.s. Varminting	
2245	22 Cal. 50 gr. SP .224" Diameter	.142	.220	Velocity 2500 - 4000 f.p.s. Varminting	
2249	22 Cal. 52 gr. BTHP MATCH .224" Diameter	.148	.227	Velocity 2500 - 3800 f.p.s. Target/ Varminting	
2250	22 Cal. 53 gr. HP MATCH .224" Diameter	.151	.243	Velocity 2500 - 3800 f.p.s. Target/ Varminting	
2260	22 Cal. 55 gr. SX .224" Diameter	.157	.235	Velocity 2100 - 3600 f.p.s. Varminting	
2265	22 Cal. 55 gr. SP .224" Diameter	.157	.235	Velocity 2500 - 3800 f.p.s. Varminting	
2266	22 Cal. 55 gr. SP w/c .224" Diameter	.157	.235	Velocity 2500 - 3800 f.p.s. Varminting	
2267	22 Cal. 55 gr. FMJ .224" Diameter	.157	.211	Velocity 2100 - 3800 f.p.s. Varminting/ Hide Hunting	
2270	22 Cal. 60 gr. SP .224" Diameter	.171	.262	Velocity 2500 - 3700 f.p.s. Varminting	
2275	22 Cal. 60 gr. HP .224" Diameter	.171	.266	Velocity 2500 - 3700 f.p.s. Varminting	
2280	22 Cal. 70 gr. SP .227" Diameter	.194	.288	Velocity 2700 - 3200 f.p.s. Varminting/ Medium Game	
2410	6mm 70 gr. SP .243" Diameter	.169	.278	Velocity 3100 - 3600 f.p.s. Varminting	
2420	6mm 75 gr. HP .243" Diameter	.181	.299	Velocity 3100 - 3600 f.p.s. Target/ Varminting	



Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
2430	6mm 80 gr. FMJ .243" Diameter	.194	.254	Velocity 2100 - 3500 f.p.s. Varminting/ Hide Hunting	
2440	6mm 87 gr. SP .243" Diameter	.210	.355	Velocity 2900 - 3400 f.p.s. Varminting/ Medium Game	
2442	6mm 87 gr. BTHP .243" Diameter	.210	.363	Velocity 2900-3400 Varminting/ Medium Game	
2450	6mm 100 gr. SP .243" Diameter	.242	.357	Velocity 2700 - 3300 f.p.s. Varminting/ Medium Game	
2453	6mm 100 gr. BTSP .243" Diameter	.242	.400	Velocity 2700 - 3300 f.p.s. Varminting/ Medium Game	
2455	6mm 100 gr. RN .243" Diameter	.242	.216	Velocity 2700 - 3300 f.p.s. Medium Game	
2510	25 Cal. 60 gr. FP .257" Diameter	.130	.122	Velocity 2200 - 3800 f.p.s. Varminting	
2520	25 Cal. 75 gr. HP .257" Diameter	.162	.302	Velocity 2800 - 4000 f.p.s. Varminting	
2530	25 Cal. 87 gr. SP .257" Diameter	.188	.308	Velocity 2600 - 3800 f.p.s. Varminting	
2540	25 Cal. 100 gr. SP .257" Diameter	.216	.336	Velocity 2700 - 3600 f.p.s. Varminting/ Medium Game	
2550	25 Cal. 117 gr. RN .257" Diameter	.253	.238	Velocity 2500 - 3300 f.p.s. Medium Game	
2560	25 Cal. 120 gr. HP .257" Diameter	.260	.388	Velocity 2400 - 3200 f.p.s. Medium Game	
2610	6.5mm 100 gr. SP .264" Diameter	.205	.346	Velocity 2500 - 3600 f.p.s. Varminting/ Medium Game	
2620	6.5mm 129 gr. SP .264" Diameter	.264	.415	Velocity 2200 - 3300 f.p.s. Medium Game	
2630	6.5mm 140 gr. SP .264" Diameter	.287	.441	Velocity 2100 - 3200 f.p.s. Medium/Medium Heavy Game	
2635	6.5mm 140 gr. RN .264" Diameter	.287	.291	Velocity 2100 - 3200 f.p.s. Medium/Medium Heavy Game	
2640	6.5mm 160 gr. RN .264" Diameter	.328	.251	Velocity 2000 - 2900 f.p.s. Medium/Medium Heavy Game	

Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
2710	270 Cal. 100 gr. SP .277" Diameter	.186	.294	Velocity 3000 - 3800 f.p.s. Varminting	
2720	270 Cal. 110 gr. HP .277" Diameter	.205	.356	Velocity 2900 - 3500 f.p.s. Varminting	
2730	270 Cal. 130 gr. SP .277" Diameter	.242	.374	Velocity 2800 - 3400 f.p.s. Medium/Medium Heavy Game	
2735	270 Cal. 140 gr. BTSP .277" Diameter	.261	.496	Velocity 2700 - 3300 f.p.s. Medium/Medium- Heavy Game	
2740	270 Cal. 150 gr. SP .277" Diameter	.279	.443	Velocity 2600 - 3200 f.p.s. Medium/Medium- Heavy Game	
2745	270 Cal. 150 gr. RN .277" Diameter	.279	.259	Velocity 2600 - 3200 f.p.s. Medium/Medium- Heavy Game	
2810	7mm 120 gr. SP .284" Diameter	.213	.378	Velocity 2600 - 3500 f.p.s. Medium Game/ Varminting	
2815	7mm 120 gr. HP .284" Diameter	.213	.343	Velocity 2600 - 3500 f.p.s. Medium Game/ Varminting	
2820	7mm 139 gr. SP .284" Diameter	.246	.396	Velocity 2500 - 3300 f.p.s. Medium/Medium- Heavy Game	
2830	7mm 154 gr. SP .284" Diameter	.273	.423	Velocity 2300 - 3200 f.p.s. Medium/Medium- Heavy Game	
2835	7mm 154 gr. RN .284" Diameter	.273	.256	Velocity 2300 - 3200 f.p.s. Medium/Medium- Heavy Game	
2840	7mm 162 gr. BTHP .284" Diameter	.287	.560	Velocity 2300 - 3000 f.p.s. Target-Match	
2845	7mm 162 gr. BTSP .284" Diameter	.287	.520	Velocity 2300 - 3000 f.p.s. Medium/Medium Heavy Game	
2850	7mm 175 gr. SP .284" Diameter	.310	.506	Velocity 2300 - 2900 f.p.s. Medium- Heavy Game	
2855	7mm 175 gr. RN .284" Diameter	.310	.260	Velocity 2300 - 2900 f.p.s. Medium- Heavy Game	
3005	30 Cal. 100 gr. SJ .308" Diameter	.151	.132	Velocity 1800 - 3100 f.p.s. Varminting	
3010	30 Cal. 110 gr. SP .308" Diameter	.166	.249	Velocity 2600 - 3900 f.p.s. Varminting	








Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
3015	30 Cal. 110 gr. RN .308" Diameter	.166	.151	Velocity 1800 - 3100 f.p.s. Varminting	
3017	30 Cal. 110 gr. FMJ .308" Diameter	.166	.151	Velocity 1800 - 3100 f.p.s. Varminting/ Hide Hunting	
3020	30 Cal. 130 gr. SP .308" Diameter	.196	.299	Velocity 2500 - 3700 f.p.s. Varminting/ Medium Game	
3031	30 Cal. 150 gr. SP .308" Diameter	.226	.358	Velocity 2700 - 3400 f.p.s. Medium/Medium- Heavy Game	
3035	30 Cal. 150 gr. RN .308" Diameter	.226	.185	Velocity 1800 - 2500 f.p.s. Medium Game	
3037	30 Cal. 150 gr. FMJ .308" Diameter	.226	.453	Velocity 2200 - 3400 f.p.s. Varminting/ Hide Hunting	
3040	30 Cal. 165 gr. SP .308" Diameter	.248	.400	Velocity 2200 - 3300 f.p.s. Medium/Medium- Heavy Game	
3045	30 Cal. 165 gr. BTSP .308" Diameter	.248	.459	Velocity 2200 - 3300 f.p.s. Medium/Medium- Heavy Game	
3050	30 Cal. 168 gr. BTHP .308" Diameter	.253	.505	Velocity 2300 - 3200 f.p.s. Target-Match	
3060	30 Cal. 170 gr. FP .308" Diameter	.256	.182	Velocity 2000 - 2500 f.p.s. Medium/Medium- Heavy Game	
3070	30 Cal. 180 gr. SP .308" Diameter	.271	.431	Velocity 2400 - 3200 f.p.s. Medium- Heavy Game	
3075	30 Cal. 180 gr. RN .308" Diameter	.271	.239	Velocity 2400 - 3200 f.p.s. Medium- Heavy Game	
3080	30 Cal. 190 gr. BTHP .308" Diameter	.286	.552	Velocity 2200 - 3100 f.p.s. Target-Match	
3085	30 cal. 190 gr. BTSP .308" Diameter	.286	.515	Velocity 2200 - 3100 f.p.s. Medium- Heavy Game	
3090	30 Cal. 220 gr. RN .308" Diameter	.331	.223	Velocity 2500 - 2800 f.p.s. Heavy Game/ Dangerous Game	
3097	30 Cal. 220 gr. FMJ .308" Diameter	.331	.271	Velocity 2500 - 2800 f.p.s. Heavy Game/ Dangerous Game	
3120	303 Cal. 150 gr. SP .312" Diameter	.220	.362	Velocity 2300 - 2700 f.p.s. Medium Game	













Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
3130	303 Cal. 174 gr. RN .312" Diameter	.255	.256	Velocity 2200 - 2600 f.p.s. Medium/Medium- Heavy Game	
3210	32 Cal. 170 gr. FP .321" Diameter	.236	.238	Velocity 1900 - 2200 f.p.s. Medium Game	
3230	8mm 125 gr. SP .323" Diameter	.171	.245	Velocity 2600 - 3600 f.p.s. Varminting/ Medium Game	
3232	8mm 150 gr. SP .323" Diameter	.205	.282	Velocity 2500 - 3400 f.p.s. Medium/Medium- Heavy Game	
3235	8mm 170 gr. RN .323" Diameter	.233	.201	Velocity 2400 - 3200 f.p.s. Medium/Medium- Heavy Game	
3238	8mm 220 gr. SP .323" Diameter	.301	.448	Velocity 2600 - 2900 f.p.s. Medium-Heavy/ Heavy/Dangerous Game	
3310	338 Cal. 200 gr. SP .338" Diameter	.250	.403	Velocity 2500 - 3200 f.p.s. Medium- Heavy Game	
3315	338 Cal. 200 gr. FP .338" Diameter	.250	.200	Velocity 1700 - 2200 f.p.s. Medium/Medium- Heavy Game	
3320	338 Cal. 225 gr. SP .338" Diameter	.281	.448	Velocity 2500 - 3000 f.p.s. Medium-Heavy/ Heavy Game	
3330	338 Cal. 250 gr. RN .338" Diameter	.313	.284	Velocity 2400 - 2800 f.p.s. Heavy/ Dangerous Game	
3410	348 Cal. 200 gr. FP .348" Diameter	.236	.263	Velocity 2200 - 2500 f.p.s. Medium/Medium- Heavy Game	
3510	35 Cal. 200 gr. SP .358" Diameter	.223	.295	Velocity 2300 - 2900 f.p.s. Medium/Medium- Heavy Game	
3515	35 Cal. 200 gr. RN .358" Diameter	.223	.180	Velocity 1800 - 2900 f.p.s. Medium/Medium- Heavy Game	
3525	35 Cal. 250 gr. RN .358" Diameter	.279	.244	Velocity 2300 - 2800 f.p.s. Heavy/ Dangerous Game	
3705	375 Cal. 220 gr. FP .375" Diameter	.223	.231	Velocity 1700 - 2200 f.p.s. Medium/Medium- Heavy Game	
3710	375 Cal. 270 gr. SP .375" Diameter	.274	.485	Velocity 2400 - 3100 f.p.s. Heavy/ Dangerous Game	



Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
3715	375 Cal. 270 gr. RN .375" Diameter	.274	.259	Velocity 2400 - 3100 f.p.s. Heavy/ Dangerous Game	
3720	375 Cal. 300 gr. RN .375" Diameter	.305	.263	Velocity 2300 - 2900 f.p.s. Heavy/ Dangerous Game	
3727	375 Cal. 300 gr. FMJ .375" Diameter	.305	.282	Velocity 2300 - 2900 f.p.s. Heavy/ Dangerous Game	
4300	44 Cal. 265 gr. FP .430" Diameter	.205	.191	Velocity 1500 - 2200 f.p.s. Medium/Medium- Heavy Game	
4500	45 Cal. 300 gr. HP .458" Diameter	.204	.171	Velocity 1600 - 2100 f.p.s. Medium/Medium- Heavy Game	
4502	45 Cal. 350 gr. RN .458" Diameter	.238	.171	Velocity 1800 - 2900 f.p.s. Medium-Heavy/ Heavy/ Dangerous Game	
4504	45 Cal. 500 gr. RN .458" Diameter	.341	.297	Velocity 1600 - 2600 f.p.s. Heavy/ Dangerous Game	
4507	45 Cal. 500 gr. FMJ .458" Diameter	.341	.320	Velocity 1600 - 2600 f.p.s. Heavy/ Dangerous Game	

## BULLET INFORMATION PISTOL BULLETS

Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
3545	25 Cal. 50 gr. FMJ .251" Diameter	.113	.102	Velocity 650 - 850 f.p.s. Self-Defense	
3550	9mm 90 gr. JHP .355" Diameter	.102	.083	Velocity 800 - 1500 f.p.s. Self-Defense/ Small Game	
3552	9mm 100 gr. FMJ .355" Diameter	.113	.098	Velocity 750 - 1350 f.p.s. Self-Defense/ Small Game	
3554	9mm 115 gr. HP .355" Diameter	.130	.127	Velocity 1000 - 1250 f.p.s. Self-Defense/ Small Game	
3556	9mm 124 gr. FMJ .355" Diameter	.141	.152	Velocity 900 - 1150 f.p.s. Self-Defense/ Small Game	



Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
3570	38 Cal. 110 gr. JHP .357" Diameter	.123	.109	Velocity 900 - 2300 f.p.s. Self-Defense/ Target/Small Game	
3571	38 Cal. 125 gr. JHP .357" Diameter	.140	.122	Velocity 850 - 2200 f.p.s. Self-Defense/ Varminting/ Small Game	
3573	38 Cal. 125 gr. JFP .357" Diameter	.140	.120	Velocity 850 - 2200 f.p.s. Self-Defense/ Varminting/ Small Game	
3575	38 Cal. 158 gr. JHP .357" Diameter	.177	.155	Velocity 650 - 2000 f.p.s. Self-Defense/ Varminting/ Metallic Silhouette	
3578	38 Cal. 158 gr. JFP .357" Diameter	.177	.153	Velocity 650 - 2000 f.p.s. Self-Defense/ Varminting/ Metallic Silhouette	
3579	38 Cal. 160 gr. FMJ .357" Diameter	.179	.151	Velocity 650 - 2000 f.p.s. Self-Defense/ Metallic Silhouette	
3580	38 Cal. 148 gr. BBWC .358" Diameter	.165	.063	Velocity 700 - 900 f.p.s. Target/ Small Game	
3582	38 Cal. 148 gr. HBWC .358" Diameter	.165	.039	Velocity 700 - 900 f.p.s. Target/ Small Game	
3586	38 Cal. 158 gr. LRN .358" Diameter	.176	.141	Velocity 650 - 1100 f.p.s. Self-Defense/ Target/Small Game	
3588	38 Cal. 158 gr. LSWC .358" Diameter	.176	.129	Velocity 650 - 1100 f.p.s. Self-Defense/ Target/Small Game	
4100	41 Cal. 210 gr. JHP .410" Diameter	.178	.141	Velocity 1000 - 1450 f.p.s. Self-Defense/ Medium Game/ Metallic Silhouette	
4410	44 Cal. 200 gr. JHP .430" Diameter	.155	.125	Velocity 1200 - 1900 f.p.s. Self-Defense/ Target/Small Game	
4420	44 Cal. 240 gr. JHP .430" Diameter	.185	.141	Velocity 1100 - 1750 f.p.s. Self-Defense/ Medium Game/ Metallic Silhouette	
4427	44 Cal. 240 gr. FMJ .430" Diameter	.185	.158	Velocity 1100 - 1750 f.p.s. Self-Defense/ Metallic Silhouette	

Order No.	Bullet	Sectional Density	Ballistic Coefficient	Optimum Usage and Performance Criteria	
4430	44 Cal. 240 gr. LSWC .430" Diameter	.185	.130	Velocity 650 - 1100 f.p.s. Self-Defense/ Target/Small Game	
4510	45 Cal. 185 gr. JHP .451" Diameter	.130	.106	Velocity 700 - 1900 f.p.s. Self-Defense/ Small Game	
4513	45 Cal. 185 gr. TARGET .451" Diameter	.130	.074	Velocity 700 - 1100 f.p.s. Target/ Small Game	
4515	45 Cal. 200 gr. C/T MATCH .451" Diameter	.140	.138	Velocity 700 - 1100 f.p.s. Self-Defense/ Target/Small Game	
4517	45 Cal. 230 gr. FMJ-RN .451" Diameter	.162	.138	Velocity 600 - 1650 f.p.s. Self-Defense/ Target/ Metallic Silhouette	
4518	45 Cal. 230 gr. FMJ-FP .451" Diameter	.162	.148	Velocity 600 - 1650 f.p.s. Self-Defense/ Target/ Metallic Silhouette	
4520	45 Cal. 250 gr. JHP .452" Diameter	.175	.138	Velocity 750 - 1550 f.p.s. Self-Defense/ Medium Game/ Metallic Silhouette	
4526	45 Cal. 200 gr. LSWC .452" Diameter	.140	.080	Velocity 650 - 1100 f.p.s. Self-Defense/ Target/Small Game	

## NOTES



# *The Operation of Reloading*

Reloading is a simple process of replacing components that have been used during the firing of a cartridge. The cartridge case must be resized, a new primer inserted to replace the spent primer, a new charge of powder added and a new bullet seated. The cartridge is again ready to be fired. It sounds simple. It is simple, provided that careful and uniform loading procedures are followed. Most reloaders find that performing each step with all the cartridge cases before proceeding to the next step enhances simplicity, uniformity, and speeds the operation.

Safety is foremost in the mind of the reloader. Orderliness at the reloading bench, as illustrated below, allows the reloader to work more efficiently with fewer opportunities to make mistakes. The picture below has all tools in place, the powder presently being used next to the measure, and only the type of primers used in that operation present on the reloading bench.

With all tools and components in proper placement, the reloader is now ready to begin the process of reloading.



#### **OPERATION ONE: INSPECT AND CLEAN CARTRIDGE CASES**

During this operation, cases should be sorted according to brand and according to lot number if possible. Different manufacturer's cases have varying capacities and neck thicknesses which can result in non-uniform or dangerous pressure, plus erratic velocities and changed zeroes. If the reloader is in doubt as to whether or not cases are of the same lot, weigh the cases and sort according to weights. Approximately four grains variation for larger calibers would be the maximum variation allowable and two grains the most desirable for small bore cartridges.

If cases have excessive amounts of grit and powder residue not removeable by merely wiping, a case cleaner such as Like-Nu Case

Cleaner produced by Pacific Tool Company performs exceptionally well. By cleaning cases, the reloader exposes hairline cracks, small dents, and signs of head separation. Cleaning cases also eliminates the possibility of scratching dies or cases when the resizing operation is performed.

Following are illustrations of faulty cases. In each situation, the case should be discarded, as further use is dangerous to the firearm and the reloader.



The first cartridge case in the preceding illustration has a split neck. Split necks are usually the result of repeated firings work hardening the brass.

The second cartridge case is a sample of a collapsed shoulder. A collapsed shoulder can be the result of a low pressure load. Gases flow back around the neck because insufficient pressure has not sealed the neck, and as a result, the shoulder collapses.

The third cartridge case illustrates an oversized primer pocket. Here the pressure was too high or even a soft piece of brass could have been the cause. If more than one of this type appears in a group of fired brass, the chances are very good that the pressure was excessive. Also, any bright burnish mark on the case head indicates brass flow into the extractor slot due to excess pressure.

The last cartridge case illustrates head separation. A sign that indicates head separation is occurring appears as a bright ring immediately above the web. Head separation can be the result of poor die adjustment or excessive headspace in the firearm.

The reloader should maintain close inspection of cases throughout the loading process; such things as split necks can occur during resizing and bullet seating, and weak primer pockets that cannot be visually noticed can be "felt" when seating primers.

## **OPERATION TWO: RESIZING THE CARTRIDGE CASE**

Resizing a cartridge case puts the case back to dimensions necessary to fit the chamber and accept a new bullet. Due to variations in brass thickness, a size die must bring the neck of a case down to dimensions too small to seat a bullet; as the case passes over the expander ball



assembly, the neck is brought up to the necessary dimensions for securely holding the bullet. This expander ball should be at least .001" less than the diameter of the bullet. Full length resizing is not always a necessary procedure. If the reloader is reloading for only one rifle and that rifle is a bolt action or a strong single shot, neck sizing is all that is necessary. A neck sizing die sizes the neck, but not the case body. By using this procedure the case remains in its fire-formed condition, more nearly fitting the exact dimensions of the chamber, usually enhancing accuracy.

If the reloader is loading for more than one rifle of the same caliber or for automatics, pumps or lever actions, he is wise to full length resize. Autos, pumps, and lever actions do not have the camming action of a bolt action rifle; and therefore, to have reliable chambering, cases need to be full length resized. Even with rifles having adequate camming action, no two chambers will be the same; therefore, cartridge cases might not chamber if only neck sized and used interchangeably between rifles.

For straight walled cases, see Operation Three of the Pistol Reload instructions.

For the present situation, we will assume the reloader must full length resize his cartridge. He must lube the cases lightly to eliminate the possibility of cases sticking in the resizing die. Care must be taken that too much lubricant does not get on the shoulder region. Excess lubricant in this area will result in pressure within the die forcing excessive oil to leave small dents on the shoulder.

Correct adjustment of the sizing die prevents chambering and extraction problems. For correct adjustment, the ram of the press should be brought to full extension. Next, the size die must be threaded in until the base of the die touches the shell holder, the lock ring set, the expander ball assembly adjusted to decap, and the reloader is ready to proceed with resizing. Note: The decapping assembly should not be adjusted in too far, as the holder of the decapping pin could "bottom out" on the inside base of the cartridge case and bend the spindle.

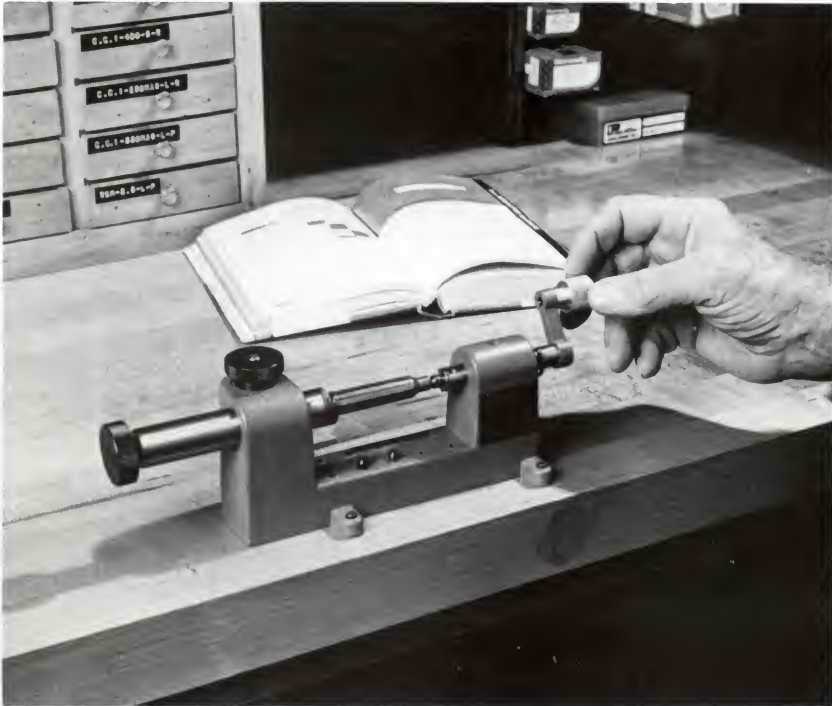
After resizing, cases must be wiped free of lubricant and inspected. At this point, primer pockets should be cleaned to insure uniform primer seating.



### OPERATION THREE: TRIMMING THE CARTRIDGE CASE

Trimming is one operation that need not be performed every time cases are reloaded. However, upon completion of resizing, several cases should be checked for length. If their average length exceeds maximums listed in the Hornady manual, then all cases should be trimmed to a uniform length, approximately .010" less than the maximum length allowed.

At this point, let us assume the cases the reloader has resized have been fired several times and need trimming. To restore cases to their correct length, an accurate trimmer such as Pacific's Deluxe Trimmer is



an excellent choice. The Deluxe Trimmer, pictured above is completely adjustable for use with all sizes of cartridge cases using the same shell holder the reloader uses in his press; the trimmer can be mounted on a bench or clamped in a vise. Another "plus" for the Deluxe Trimmer appears when a very large quantity of cases need trimming; here an electric drill can be employed to replace the handle, speeding up an otherwise arduous task.

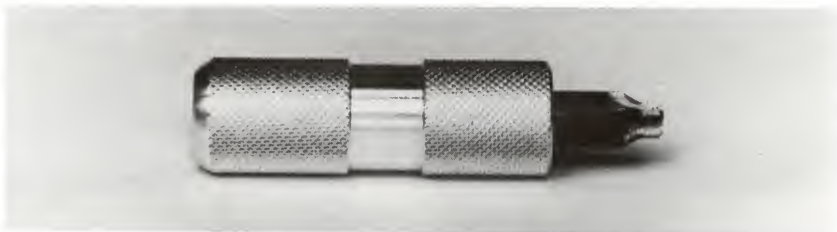
A good method for ease of adjustment is to keep a new case as a sample. When all adjustments are made, the reloader proceeds with trimming, checking at intervals to insure no adjustments have slipped.

Upon completion of trimming, case necks must be deburred and chamfered with a deburring tool. Again, Pacific produces a deburring and chamfering tool that does both jobs smoothly and precisely. After deburring, be sure to wipe free any brass trimmings from the cases, as

particles may fall into the chamber during loading and result in case damage or difficult chambering.



If the cases being used are once-fired military brass, now is an appropriate time to remove the crimp from around the primer pocket. Pacific makes a handy tool just for this purpose; along with removing the crimp, this tool cleans the primer pocket.



#### **OPERATION FOUR: INSERTING NEW PRIMERS**

For ease of handling, the reloader places his primers in a shallow tray. With hands free of oil or grease, the reloader inserts a case in the shell holder, inserts a primer in the primer arm cup, fully extends the ram, pushes the primer arm into the slot provided in the ram, and backs the case down on the primer. The process of seating a primer is of great importance to accuracy. It must be done with uniform motion and enough pressure to fully seat the primer every time. If a primer is not seated deeply enough, it can be removed or seated deeper as the case may warrant. If a live primer must be removed, never use a punch and hammer, as the sharp blow could set off the primer; always use a die with the decapping pin in place and remove with slow, even



pressure. In fact, there is no completely safe method for removing a live primer.

### OPERATION FIVE: CHARGING THE CASES WITH POWDER

Two safety rules which cannot be emphasized enough are not to smoke while reloading and never to mix powders. Only the powder being used should be kept on the bench next to the powder measure. Records of powder charges used should be maintained. Reloading should not be done from memory.

We are going to assume that the reloader is not weighing each charge and is using a Pacific Powder Measure. For most powders, the reloader can use a powder measure with enough accuracy that weighing each charge gives no significant improvement with small to medium capacity cases. Only the very coarse extruded powders such as 4350 and 4831 do not meter through a powder measure with acceptable accuracy. For large capacity cases and large charges, a powder measure is acceptably accurate with all powders.

First, the reloader pours the selected powder into the measure. Next, using a Pacific Scale in conjunction with the powder measure, the reloader adjusts the micrometer dial on the measure for the intended powder charge. Using two loading blocks, one for uncharged cases and one for charged cases, the reloader begins charging cases using uniform motion that insures accurate powder charges. While "throwing" charges, return any that "feel" too rough or too smooth; such procedure enhances uniformity. At intervals of ten to twenty cases the reloader should weigh a charge on his scale to be assured that the charge weight has not varied. When all cases are charged, the reloader can visually inspect each loaded round to see that powder levels are uniform throughout. After all cases have been inspected, the remaining powder from the powder measure should be returned to its proper container.



## OPERATION SIX: SEATING A BULLET

There are two ways a bullet can be seated: by friction-fit or with a crimp. Crimping a bullet is necessary when rifles are used that have tubular magazines or produce heavy recoil. The crimp is made near the top of the cannelure of the bullet, which basically predetermines cartridge overall length. The friction-fit method is nothing more than seating the bullet without a crimp. In this instance, the reloader relies on the resized neck of the case to hold the bullet securely; in most cases, this is all that is necessary.

The reloader will seat a bullet without crimping; but first, the seating die must be adjusted in the press. To accomplish this task, the reloader places an empty case in the shell holder and brings the

ram to full extension. He then screws the die into the press until he can feel the die "bottom out" on the empty case neck. At this point, he backs the die out approximately .020" and sets the die body lock ring. Now, he replaces the empty case with a charged case and seats the bullet, adjusting the seating stem in small increments until the correct cartridge overall length is obtained. When the correct length is obtained, the reloader tightens the lock ring on the seating stem and continues seating bullets in the remainder of the cartridge cases.

If a crimp is required, one should follow the above directions up to and including seating the bullet. Here the bullet should be seated to the desired cartridge







overall length. After the bullet is seated to the correct cartridge overall length, the seating stem must be backed out several turns and the die body lock ring loosened. With the loaded cartridge case still in the shell holder and the ram fully extended, the die body must be turned into the press until it contacts the neck of the loaded cartridge case. Next, the ram should be returned to the starting position and the die body adjusted about one-sixteenth of a revolution. This should provide the moderate to heavy crimp necessary to securely hold the

bullet. Care must be taken that the die not be adjusted in too far, as the case neck could collapse into the shoulder. After the proper crimp has been obtained with the ram and cartridge fully extended into the die, the seating stem should be adjusted down to touch the bullet, the lock ring on the seating stem set, the lock ring on the die body set, and the reloader is then ready to seat the bullets in the remaining cartridges. Once the lock rings have been tightened, the die is easily removed and replaced without changing the adjustments.



Upon completion of seating all bullets, for future reference, the prudent reloader takes the time to record in a log and on the ammo

box the components that were used (case type, powder type, primer type, powder charge, and cartridge overall length).

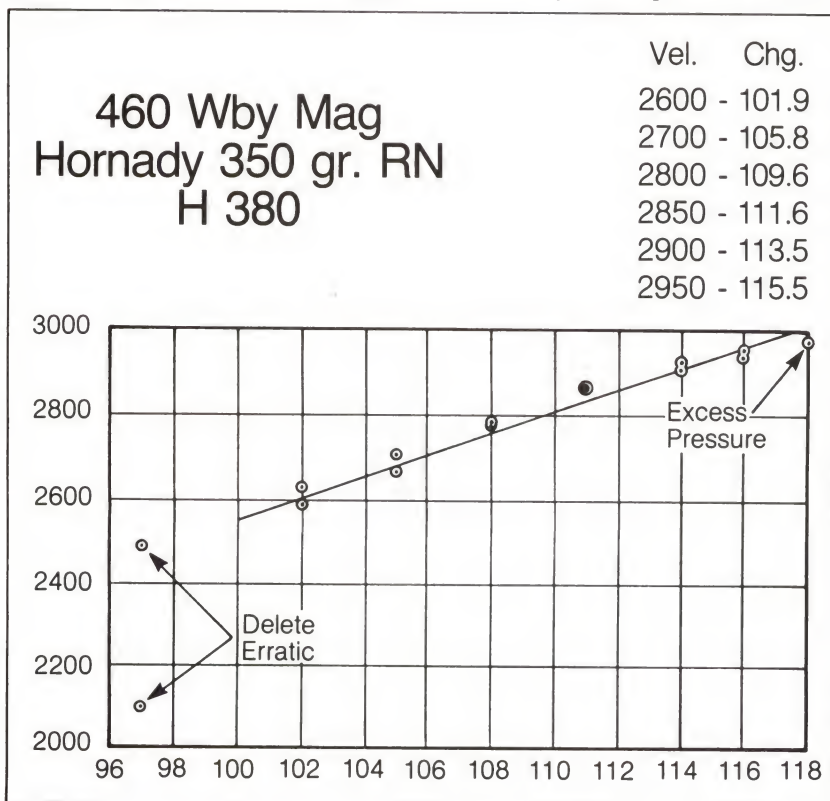


*Introduction to  
the Loading  
Data*

At the time of this writing, the loading data presented here is the most complete listing available. With bullets arranged from lightest to heaviest and powders listed with burning rates from fastest to slowest, the loading data is convenient and easy to use. For rapid location, each cartridge is conveniently indexed.

The method used for developing the loading data in the Hornady manual is one of ease and efficiency. Maximum loads for most popular standard U.S. Cartridges were obtained through the use of pressure barrels; these loads adhere to the guidelines provided by Sporting Arms and Ammunition Manufacturers' Institute (S.A.A.M.I.). Maximum loads for wildcat, foreign, and older less popular U.S. cartridges were obtained by visual case signs such as flat cratered primers, measured case heads (via special case head gauge), and difficult extraction.

The graphical analysis system was employed in conjunction with prior listed methods in obtaining the entire loading data. The data was collected by firing pairs of shots loaded with the same charges of powder in increments of two grains or less, depending on case volume. Upon firing, velocities were graphed and analyzed as pictured below.



Where non-uniformity is noted, only the best usable data were retained (note illustration above). These data were fed into a computer



and "averaged" and a line was plotted indicating that average. Resulting 100 fps or 50 fps interval charges were then computed. Included in the analysis was criteria for the "fit" of data as opposed to the plotted line. In this manner, along with actual compared accuracy results, only the best data were included for each cartridge.

Occasionally, when using the same powder with different weight bullets, the heavier bullet shows a greater powder charge than the lighter bullet. The reason for the phenomenon is simple, but not always obvious to the reader. We will use the data of the 300 Winchester Magnum with the 165 grain BTSP, the 180 grain SP, and IMR 4350 as an example. The data listed shows the 165 grain bullet with a maximum charge of 70.5 grains, while with the 180 grain bullet, 71.5 is maximum. This would appear to be incorrect. Not so. The actual maximum for the 165 grain bullet was 72 grains, but the next 100 fps increment would be 72.5 grains, which is over maximum. With the 180 grain bullet, the 71.5 grain charge listed just happens to be the actual maximum also. So therein lies the story of how a heavier bullet might show a greater powder charge than a lighter bullet with the same powder.

When deciding on a load, the best powder choice is usually that powder which most nearly fills the case for the intended velocity. Such a loading generally gives the highest velocity with the lowest pressure. When working up a load, we recommend the Hornady method of loading pairs of cartridges with powder charges in increments of one grain or less depending on case volume, and ranging from the bottom to the top of the velocity range, as listed in the Hornady manual. Here, the reloader can observe two important factors: first the gradual increase in pressure signs; and second, the accuracy of the various pairs of shots. If a given pair of shots shows exceptional accuracy, the reloader can try several rounds in this range and quickly verify whether or not it is a good load for his rifle. This process reduces the total number of rounds necessary in determining the most desirable load for a specific rifle.

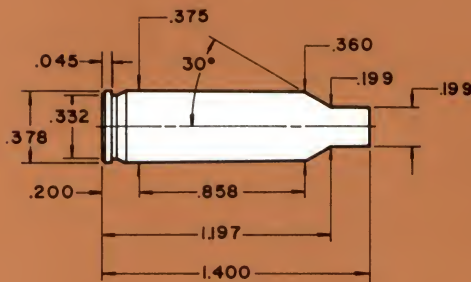
All cartridges have only a certain number of applicable powders; some cartridges are more versatile and can use a wider range of burning rates with good results. Generally, for any given cartridge, slower burning powders are more suitable with heavier bullets, and faster powders work better with lighter bullets. Many reloaders like a powder that delivers maximum or near maximum performance throughout the range of bullets. This can be very desirable, but not always obtainable, as some cartridges have too wide a range of bullets for any one burning rate to be the best choice.

To reiterate, if the reloader starts low in working up loads; watches for pressure signs; uses good safety practices; and begins again when changing components, reloading will be a rewarding, safe endeavor!

## NOTES

*Rifle  
Reloading  
Data*





## 17 MACH IV

**RIFLE: REMINGTON MODEL 660**

**BARREL: 25", 1 in 10" TWIST**

**CASE: REMINGTON-PETERS**

**PRIMER: REMINGTON 7½**

Originally introduced by the O'Brien Rifle Company of Las Vegas, Nevada, the 17 Mach IV is based on the necked down 221 Remington Fireball case with the shoulder angle reformed to 30 degrees.

This is the smallest and most efficient 17 caliber cartridge listed in the Hornady manual. In such a small case with a minimum spread in powder charges of approximately 3 grains, uniform measure of powder charges is very critical; a ½ grain variation in the powder charge can make as much as 100 fps difference and dramatic changes in pressure. H 4227 and Win. 630 gave excellent results in our test rifle.

17 CALIBER (.172" Dia.)

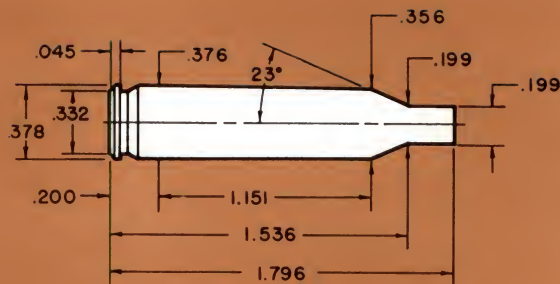
25 GRAIN HOLLOW POINT #1710

CARTRIDGE OVERALL LENGTH 1.770"



POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
WIN 630	10.7 gr.	11.2 gr.	11.7 gr.	12.2 gr.	12.8 gr.	13.3 gr.
2400	11.1 gr.	11.6 gr.	12.1 gr.	12.6 gr.	13.1 gr.	
H4227	11.8 gr.	12.3 gr.	12.9 gr.	13.5 gr.	14.0 gr.	14.6 gr.
H4198		13.6 gr.	14.1 gr.	14.6 gr.	15.1 gr.	15.6 gr.
N200		14.8 gr.	15.2 gr.	15.6 gr.	16.0 gr.	16.4 gr.

17 MACH IV



## 17 REMINGTON

**RIFLE:** REMINGTON 700

**BARREL:** 24", 1 in 10" TWIST

**CASE:** REMINGTON

**PRIMER:** REMINGTON 7½

Hornady introduced the 17 caliber .172" diameter, 25 grain Hollow Point at the beginning of 17 caliber popularity. In 1971, Remington recognized that the market was ready for a commercial 17 caliber and standardized the 17 Remington. This cartridge is the only 17 ever available in a commercial rifle and loaded ammunition. This factory cartridge quickly dominated the 17 caliber scene, and replaced most of the Wildcats such as the 17/222 and 17/223. The 17 is an ideal cartridge for fur and varmint hunters because of minimal pelt damage and the mild report that allows hunting in the more settled areas.

Hornady is still the only American bullet manufacturer that produces a 17 caliber bullet. The 17 Remington, IMR 4320, and the Hornady 25 grain Hollow Point make an excellent varmint combination.



## 17 CALIBER (.172" Dia.)

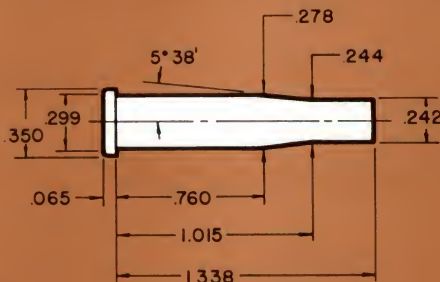
## 25 GRAIN HOLLOW POINT #1710

CARTRIDGE OVERALL LENGTH 2.170"



POWDER	VELOCITY					
	3600 fps	3700 fps	3800 fps	3900 fps	4000 fps	4100 fps
IMR 4198	17.6 gr.	18.4 gr.	19.1 gr.	19.8 gr.		
RELODER 7	17.8 gr.	18.3 gr.	18.9 gr.	19.5 gr.		
IMR 3031	20.3 gr.	20.9 gr.	21.6 gr.	22.2 gr.		
BL-C2	20.5 gr.	21.2 gr.	21.9 gr.	22.6 gr.		
WIN 748	21.1 gr.	21.9 gr.	22.6 gr.	23.3 gr.		
N203	21.1 gr.	21.8 gr.	22.5 gr.	23.3 gr.	24.0 gr.	
IMR 4064	21.4 gr.	22.0 gr.	22.5 gr.	23.1 gr.		
IMR 4895	21.9 gr.	22.6 gr.	23.2 gr.	23.8 gr.	24.5 gr.	
H380	22.6 gr.	23.3 gr.	23.9 gr.			
IMR 4320	22.6 gr.	23.1 gr.	23.7 gr.	24.2 gr.	24.7 gr.	25.2 gr.
WIN 760	25.1 gr.	25.8 gr.	26.4 gr.	27.1 gr.	27.7 gr.	
N204	25.3 gr.	25.8 gr.	26.4 gr.	26.9 gr.		

 Indicates maximum load • use with caution



## 22 HORNET

**RIFLE: RUGER #3**

**BARREL: 22", 1 in 16" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 6½**

From the 22 WCF black powder cartridge came the modern smokeless powder version, the 22 Hornet. In 1930 Winchester produced ammunition for the 22 Hornet and in 1932 Savage introduced a bolt action rifle, Model 23-D, for the Hornet, while Winchester followed in 1933 with their Model 54 bolt action. With the 22 Hornet came the era for small bore, high performance cartridges.

The Hornet round makes a fine varmint and small game cartridge in settled areas because of its mild report and fine accuracy. The Hornady 45 grain Spire Point is designed expressly for Hornet velocities and is available in .223" diameter for older rifles, and .224" diameter for the more modern Hornet rifles such as the Ruger #3. Our 50 grain SX bullet also performs very well on varmints. Normally 55 grain bullets do not receive a great deal of consideration for the Hornet because of reduced velocities, but use of the 55 grain FMJ Hornady bullet for table fare is an excellent choice to prevent a great deal of damage to the meat.

With the advent of higher intensity small bore cartridges that followed World War II, the popularity of the 22 Hornet ebbed. In recent years the 22 Hornet has gained renewed interest, with a great deal of credit going to Ruger for chambering the round in its #3 carbine and Thompson Center for chambering it in the popular Contender pistol.

With our test rifle, the powders that gave the most uniform results coupled with the best accuracy were IMR 4227 and Win. 296.

## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 1.750"



POWDER	VELOCITY						
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H110	8.4 gr.	8.8 gr.	9.2 gr.	9.7 gr.	10.1 gr.		
2400	8.6 gr.	9.0 gr.	9.3 gr.	9.7 gr.			
WIN 296	8.7 gr.	9.3 gr.	9.9 gr.	10.5 gr.	11.2 gr.	11.8 gr.	12.4 gr.
R123	8.9 gr.	9.5 gr.	10.0 gr.	10.6 gr.			
IMR 4227	9.8 gr.	10.3 gr.	10.8 gr.	11.3 gr.	11.8 gr.		
WIN 680	10.0 gr.	10.7 gr.	11.3 gr.	11.9 gr.	12.6 gr.		

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SX (Super Explosive) #2240

CARTRIDGE OVERALL LENGTH 1.780"



POWDER	VELOCITY						
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
H110	8.0 gr.	8.5 gr.	9.0 gr.	9.5 gr.			
2400	8.2 gr.	8.7 gr.	9.2 gr.	9.7 gr.			
WIN 296	8.4 gr.	9.0 gr.	9.7 gr.	10.3 gr.	10.9 gr.	11.6 gr.	12.2 gr.
R123	9.1 gr.	9.5 gr.	9.9 gr.	10.3 gr.			
IMR 4227	9.7 gr.	10.2 gr.	10.7 gr.	11.2 gr.	11.7 gr.		
WIN 680	9.7 gr.	10.3 gr.	10.9 gr.	11.5 gr.	12.1 gr.		

## 22 CALIBER (.224" Dia.)

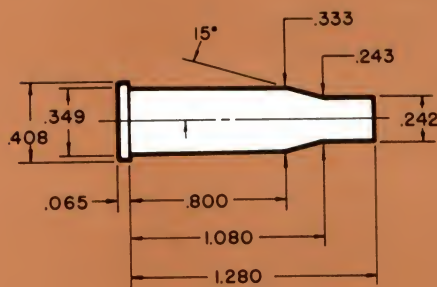
### 55 GRAIN FMJ (Full Metal Jacket) #2267

CARTRIDGE OVERALL LENGTH 1.780"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H110	7.6 gr.	8.2 gr.	8.8 gr.	9.4 gr.	
2400	8.2 gr.	8.5 gr.	8.9 gr.		
WIN 296	8.1 gr.	8.7 gr.	9.3 gr.	9.9 gr.	10.4 gr.
R123	8.5 gr.	9.2 gr.	9.9 gr.	10.6 gr.	
IMR 4227	9.1 gr.	9.7 gr.	10.3 gr.	10.8 gr.	
WIN 680	9.5 gr.	10.1 gr.	10.6 gr.	11.1 gr.	11.6 gr.

Indicates maximum load • use with caution



## 218 BEE

**RIFLE: WINCHESTER MODEL 43**

**BARREL: 24", 1 in 16" TWIST**

**CASE: WINCHESTER**

**PRIMER: WESTERN 6½**

The 218 Bee packs much more sting than its older cousin, the 22 Hornet. Introduced by Winchester in 1938 and received with considerable enthusiasm by performance minded varminters, the 218 Bee has more powder capacity than the Hornet, produces somewhat higher velocities with a broader range of powders, will accommodate heavier bullets (50 and 55 gr.) more easily, and has a slightly longer effective range. Yet the Bee never attained the degree of popularity the Hornet earned.

Winchester originally chambered its Model 65 lever action for this necked-down 25-20 cartridge. While there is nothing inherently inaccurate about the 218 Bee (as performance of the cartridge in good bolt action or single shot rifles will attest), its accuracy potential in the lever action was not all that varminters desired. When, after WWII, Winchester chambered its Model 43 bolt action for the Bee, it still failed to gain great acceptance.

Loaded with Hornady 22 caliber bullets, whether the 40 gr. Jet (for lever guns), the 45 gr. Spire Point, or the 50 or 55 gr. SX (Superexplosive), the 218 Bee will produce good results on most varmints out to 150-200 yards. It is neither as flat-shooting nor as potent as the 222 Remington to which many former 218 Bee owners have since graduated.



**22 CALIBER (.222" Dia.)****40 GRAIN JET #2210**

CARTRIDGE OVERALL LENGTH 1.615"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H110		10.9 gr.	11.3 gr.	11.6 gr.		
2400			11.1 gr.	11.7 gr.	12.2 gr.	
H4227				12.7 gr.	13.1 gr.	13.5 gr.
H4198	13.2 gr.	13.6 gr.	14.0 gr.	14.5 gr.		

**22 CALIBER (.224" Dia.)****45 GRAIN HORNET #2230**

CARTRIDGE OVERALL LENGTH 1.640"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H110			10.2 gr.	10.8 gr.	11.4 gr.	
2400			10.0 gr.	10.7 gr.	11.4 gr.	12.1 gr.
H4227				11.1 gr.	12.0 gr.	13.0 gr.
H4198	12.3 gr.	12.8 gr.	13.2 gr.	13.6 gr.	14.1 gr.	14.5 gr.
BL-C2	16.2 gr.	16.8 gr.	17.4 gr.	18.0 gr.		

**22 CALIBER (.224" Dia.)****50 GRAIN SPIRE POINT #2245**

CARTRIDGE OVERALL LENGTH 1.625"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
2400	9.4 gr.	9.7 gr.	10.1 gr.	10.5 gr.		
H110	9.7 gr.	10.0 gr.	10.3 gr.	10.6 gr.	10.9 gr.	
H4227		10.0 gr.	10.8 gr.	11.7 gr.	12.5 gr.	
H4198	12.1 gr.	12.6 gr.	13.1 gr.	13.7 gr.	14.2 gr.	14.7 gr.
BL-C2		16.1 gr.	16.7 gr.	17.4 gr.	18.1 gr.	

These data may also be used with the 22 cal. 50 gr. SX bullet.

 Indicates maximum load • use with caution

**22 CALIBER (.224" Dia.)**  
**55 GRAIN SPIRE POINT #2265**

CARTRIDGE OVERALL LENGTH 1.580"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
2400	9.2 gr.	9.9 gr.	10.6 gr.	11.3 gr.		
H110	9.3 gr.	10.0 gr.	10.7 gr.	11.4 gr.		
H4227		10.7 gr.	11.4 gr.	12.1 gr.	12.8 gr.	
H4198	12.3 gr.	12.7 gr.	13.1 gr.	13.6 gr.	14.0 gr.	14.4 gr.
BL-C2	15.6 gr.	16.3 gr.	17.0 gr.	17.7 gr.		

These data may also be used with the 22 cal. 55 gr. FMJ, the 55 gr. SX, the 52 gr. BTHP, and the 53 gr. HP bullets.



*Indicates maximum load • use with caution*



**22 CALIBER (.224" Dia.)**  
**45 GRAIN HORNET #2230**

CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY			
	3000 fps	3100 fps	3200 fps	3300 fps
RELODER 7	19.7 gr.	20.4 gr.	21.1 gr.	
IMR 4198	21.3 gr.	21.9 gr.	22.6 gr.	
H322	22.5 gr.	23.1 gr.	23.7 gr.	24.3 gr.
H335	23.8 gr.	24.6 gr.	25.3 gr.	26.1 gr.
IMR 4895	24.0 gr.	24.8 gr.		
BL-C2	24.2 gr.	24.9 gr.	25.5 gr.	26.2 gr.
WIN 748	25.0 gr.	25.8 gr.	26.6 gr.	27.3 gr.

**22 CALIBER (.224" Dia.)**  
**50 GRAIN SPIRE POINT #2245**

CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RELODER 7	19.1 gr.	19.9 gr.			
IMR 4198	19.0 gr.	19.7 gr.	20.3 gr.	21.0 gr.	
N200	20.8 gr.	21.5 gr.			
H322	21.6 gr.	22.4 gr.	23.1 gr.	23.9 gr.	
H335	23.1 gr.	23.8 gr.	24.6 gr.	25.4 gr.	
IMR 4895	23.3 gr.	24.0 gr.	24.8 gr.	25.5 gr.	
BL-C2	23.9 gr.	24.6 gr.	25.3 gr.	26.0 gr.	
WIN 748	24.5 gr.	25.2 gr.	25.9 gr.	26.6 gr.	27.4 gr.

These data may also be used with the 22 caliber 50 gr. SX.



*Indicates maximum load • use with caution*



**22 CALIBER (.224" Dia.)****53 GRAIN HOLLOW POINT #2250**

CARTRIDGE OVERALL LENGTH 2.200"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4198	18.6 gr.	19.3 gr.	19.9 gr.	20.5 gr.	
N200	20.1 gr.	20.8 gr.	21.5 gr.		
IMR 3031	21.3 gr.	21.9 gr.	22.6 gr.		
H322	21.1 gr.	21.8 gr.	22.5 gr.		
H335	22.5 gr.	23.2 gr.	24.0 gr.	24.7 gr.	
IMR 4895	22.8 gr.	23.6 gr.	24.4 gr.	25.1 gr.	
BL-C2	23.4 gr.	24.2 gr.	25.0 gr.	25.8 gr.	
IMR 4320	23.9 gr.	24.6 gr.	25.4 gr.		
WIN 748	24.1 gr.	24.8 gr.	25.5 gr.	26.2 gr.	26.9 gr.

These data may also be used with the 52 gr. HP Match bullet.

**22 CALIBER (.224" Dia.)****55 GRAIN SPIRE POINT #2265**

CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4198	18.0 gr.	18.6 gr.	19.3 gr.	20.0 gr.	20.6 gr.
N200	19.7 gr.	20.4 gr.	21.0 gr.		
IMR 3031	20.6 gr.	21.2 gr.	21.8 gr.	22.4 gr.	
H322	20.8 gr.	21.5 gr.	22.2 gr.		
H335	21.7 gr.	22.5 gr.	23.3 gr.	24.1 gr.	24.9 gr.
IMR 4895	22.1 gr.	22.9 gr.	23.7 gr.	24.6 gr.	25.4 gr.
IMR 4064	22.6 gr.	23.3 gr.	24.0 gr.		
BL-C2	23.8 gr.	24.5 gr.	25.3 gr.		
IMR 4320	23.2 gr.	23.9 gr.	24.6 gr.	25.4 gr.	
WIN 748		24.1 gr.	24.9 gr.	25.7 gr.	26.4 gr.

These data may also be used with the 55 gr. FMJ and the 55 gr. SX bullets.

*Indicates maximum load • use with caution*

**22 CALIBER (.224" Dia.)**  
**55 GRAIN FMJ (Full Metal Jacket) #2267**



CARTRIDGE OVERALL LENGTH 2.160"

VELOCITY						
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR 4759	11.8 gr.	12.5 gr.	13.2 gr.	14.0 gr.	14.7 gr.	15.5 gr.

**22 CALIBER (.224" Dia.)**  
**60 GRAIN SPIRE POINT #2270**



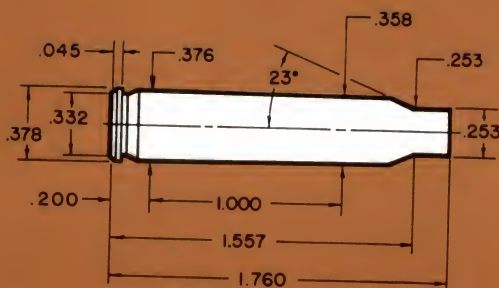
CARTRIDGE OVERALL LENGTH 2.130"

VELOCITY					
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4198	17.6 gr.	18.3 gr.	18.9 gr.	19.6 gr.	
N200	19.1 gr.	19.8 gr.	20.5 gr.		
IMR 3031	20.1 gr.	20.8 gr.	21.5 gr.	22.1 gr.	
H322	20.4 gr.	21.1 gr.	21.8 gr.		
H335	21.0 gr.	21.9 gr.	22.8 gr.	23.6 gr.	24.5 gr.
IMR 4895	21.6 gr.	22.3 gr.	23.1 gr.	23.8 gr.	24.5 gr.
IMR 4064	22.1 gr.	22.7 gr.	23.3 gr.		
BL-C2	22.3 gr.	23.1 gr.	23.8 gr.	24.6 gr.	
WIN 748	22.6 gr.	23.4 gr.	24.3 gr.	25.1 gr.	25.9 gr.
IMR 4320	22.6 gr.	23.4 gr.	24.1 gr.	24.8 gr.	

These data may also be used with the 22 cal. 60 gr. HP.



*Indicates maximum load • use with caution*



## 223 REMINGTON

**RIFLE:** REMINGTON 700

**BARREL:** 24", 1 in 12" TWIST

**CASE:** W.C.C. 70

**PRIMER:** REMINGTON 7½

The 223 Remington began as a military cartridge in 1957 and was later introduced by Remington as a commercial round. The cartridge is now chambered by numerous manufacturers. Because military surplus brass is readily available, the 223 is more popular than the 222 Magnum, and its popularity is still growing.

When comparing the 222 Magnum and the 223, the case size appears to be nearly identical. However, the 222 Magnum is about one tenth of an inch longer and holds ½ to 1 grain more powder. 223 cartridges should not be fired in a 222 Magnum as the cases are likely to rupture.

The 223 is an excellent choice for varmint hunters and at the time of this writing, the types of commercial actions in which this cartridge is available, ranges from the Ruger Mini 14 semi-automatic to the Remington 40 XB. Couple this wide assortment of firearms with Hornady's superb selection of 22 caliber bullets and the 223 is adequate for any 22 Caliber use.

In our test rifle, the best accuracy and uniformity throughout the range of Hornady bullets was obtained with Win. 748, N201, and IMR 4198. Note: When using a 223 with 1:10" twist barrels (as in Ruger Mini 14's), do not use SX bullets. The rapid twist can cause these fragile bullets to come apart in flight, especially at maximum velocities.

# 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.200"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4198	20.6 gr.	21.3 gr.	22.0 gr.	22.7 gr.	23.4 gr.	
N200	22.7 gr.	23.5 gr.	24.2 gr.	25.0 gr.	25.7 gr.	26.5 gr.
IMR 3031		23.8 gr.	24.6 gr.	25.5 gr.		
H322	23.3 gr.	23.9 gr.	24.5 gr.	25.1 gr.	25.7 gr.	
N201	24.1 gr.	24.7 gr.	25.3 gr.	25.9 gr.	26.5 gr.	
H335	23.0 gr.	24.0 gr.	25.0 gr.	26.1 gr.	27.1 gr.	28.1 gr.
BL-C2	24.9 gr.	25.6 gr.	26.3 gr.	27.0 gr.	27.7 gr.	
WIN 748	25.5 gr.	26.5 gr.	27.5 gr.	28.6 gr.		

# 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.200"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4198	19.5 gr.	20.2 gr.	20.9 gr.	21.6 gr.	22.2 gr.	22.9 gr.
H322	21.9 gr.	22.6 gr.	23.2 gr.	23.9 gr.	24.5 gr.	25.2 gr.
N201	21.5 gr.	22.2 gr.	23.0 gr.	23.8 gr.	24.5 gr.	25.3 gr.
IMR 3031	22.5 gr.	23.2 gr.	23.8 gr.	24.4 gr.	25.1 gr.	25.7 gr.
H335	21.8 gr.	22.7 gr.	23.7 gr.	24.7 gr.	25.7 gr.	26.6 gr.
BL-C2	22.9 gr.	23.9 gr.	24.8 gr.	25.8 gr.	26.7 gr.	
IMR 4895	24.3 gr.	25.0 gr.	25.7 gr.	26.3 gr.	27.0 gr.	
WIN 748	24.5 gr.	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.
IMR 4320	25.0 gr.	25.7 gr.	26.5 gr.	27.2 gr.	27.9 gr.	
H380	25.3 gr.	26.2 gr.	27.2 gr.	28.1 gr.	29.0 gr.	

These data may be used also with the 22 cal. 50 gr. SX bullet.

*Indicates maximum load • use with caution*



# 22 CALIBER (.224" Dia.)

## 53 GRAIN HOLLOW POINT #2250

CARTRIDGE OVERALL LENGTH 2.300"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4198	19.2 gr.	20.1 gr.	21.0 gr.	21.9 gr.	22.8 gr.	
N200	21.1 gr.	22.0 gr.	22.8 gr.	23.7 gr.	24.5 gr.	25.3 gr.
H322	22.2 gr.	22.9 gr.	23.6 gr.	24.3 gr.	25.0 gr.	
IMR 3031	22.2 gr.	22.9 gr.	23.5 gr.	24.2 gr.	24.8 gr.	25.5 gr.
N201	22.0 gr.	22.9 gr.	23.7 gr.	24.6 gr.	25.5 gr.	26.4 gr.
H335	22.3 gr.	23.3 gr.	24.3 gr.	25.4 gr.	26.4 gr.	
BL-C2	22.5 gr.	23.5 gr.	24.5 gr.	25.5 gr.	26.5 gr.	27.4 gr.
IMR 4895	24.1 gr.	24.9 gr.	25.6 gr.	26.4 gr.	27.1 gr.	
WIN 748	23.8 gr.	24.8 gr.	25.8 gr.	26.9 gr.	27.9 gr.	28.9 gr.
IMR 4320	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	27.9 gr.	

These data may also be used with the 52 gr. HP Match bullet.

# 22 CALIBER (.224" Dia.)

## 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.200"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4198	18.5 gr.	19.4 gr.	20.3 gr.	21.1 gr.	22.0 gr.	
N200	20.4 gr.	21.3 gr.	22.2 gr.	23.1 gr.	23.9 gr.	24.8 gr.
H322	21.6 gr.	22.2 gr.	22.9 gr.	23.5 gr.	24.1 gr.	
N201	21.4 gr.	22.2 gr.	23.1 gr.	24.0 gr.	24.8 gr.	
IMR 3031	21.6 gr.	22.3 gr.	22.9 gr.	23.6 gr.	24.3 gr.	25.0 gr.
H335	21.4 gr.	22.4 gr.	23.4 gr.	24.4 gr.	25.4 gr.	26.3 gr.
BL-C2	22.1 gr.	23.0 gr.	24.0 gr.	25.0 gr.	25.9 gr.	26.9 gr.
IMR 4895			25.0 gr.	25.9 gr.	26.8 gr.	27.7 gr.
WIN 748	23.0 gr.	24.0 gr.	24.9 gr.	25.9 gr.	26.8 gr.	27.7 gr.
IMR 4320	24.0 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.

These data may also be used with the 22 cal. 55 gr. SX and 55 gr. FMJ bullets.

Indicates maximum load • use with caution

**22 CALIBER (.224" Dia.)****55 GRAIN FMJ (Full Metal Jacket) #2267**

CARTRIDGE OVERALL LENGTH 2.220"

**REDUCED LOADS**

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR 4759	11.3 gr.	12.1 gr.	12.9 gr.	13.7 gr.	14.4 gr.	15.2 gr.

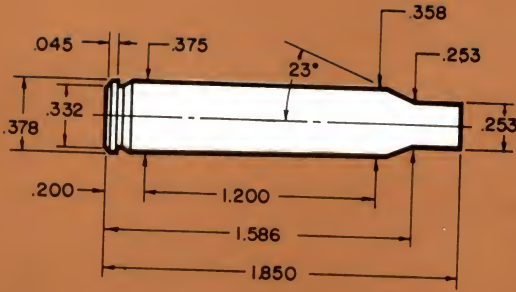
**22 CALIBER (.224" Dia.)****60 GRAIN SPIRE POINT #2270**

CARTRIDGE OVERALL LENGTH 2.200"

POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4198	18.1 gr.	19.0 gr.	19.9 gr.	20.8 gr.	21.7 gr.	22.6 gr.
N200	19.9 gr.	20.8 gr.	21.7 gr.	22.6 gr.	23.5 gr.	24.5 gr.
H322	20.9 gr.	21.7 gr.	22.4 gr.	23.1 gr.	23.8 gr.	
IMR 3031	21.2 gr.	22.0 gr.	22.7 gr.	23.5 gr.	24.2 gr.	25.0 gr.
N201	20.6 gr.	21.5 gr.	22.5 gr.	23.5 gr.	24.5 gr.	25.4 gr.
H335	20.8 gr.	21.9 gr.	22.9 gr.	24.0 gr.	25.0 gr.	26.0 gr.
BL-C2	20.5 gr.	21.6 gr.	22.7 gr.	23.7 gr.	24.8 gr.	25.9 gr.
IMR 4064	22.4 gr.	23.2 gr.	24.0 gr.	24.8 gr.	25.6 gr.	
IMR 4895	23.0 gr.	23.8 gr.	24.6 gr.	25.5 gr.	26.3 gr.	27.1 gr.
WIN 748	22.1 gr.	23.2 gr.	24.3 gr.	25.4 gr.	26.5 gr.	
IMR 4320	23.7 gr.	24.5 gr.	25.4 gr.	26.3 gr.	27.1 gr.	28.0 gr.
H380	24.2 gr.	25.3 gr.	26.4 gr.	27.4 gr.		

These data may also be used with the 60 gr. HP bullet.

Indicates maximum load • use with caution



## 222 REMINGTON MAGNUM

**RIFLE:** REMINGTON MODEL 722

**BARREL:** 26", 1 in 14" TWIST

**CASE:** REMINGTON

**PRIMER:** CC1 400

Between 1955 and 1964, twenty-six new rifle and pistol cartridges were introduced by arms manufacturers to American shooters. Exactly half of them were magnums. The 222 Remington Magnum came on the scene in 1958, along with two other entries in the great magnum race: the 264 Winchester Magnum and the 460 Weatherby Magnum.

A lengthened version of the 222 Remington, this magnum cartridge was originally an experimental design for the U.S. military (which ultimately adopted a variation known as the 5.56mm or commercially as the 223 Remington). The 222 Remington Magnum has greater case capacity than the 222 and thus somewhat more velocity and range potential. In performance terms it falls midway between the 222 and such venerable cartridges as the 219 Donaldson Wasp and Winchester's 219 Zipper. Top velocities with the 222 magnum, however, fall 300-400 fps below those possible with such high performance 22's as the 225 Winchester, the 22-250, and the 220 Swift.

The advantages of the 222 Remington Magnum over its parent cartridge, the standard 222, are slight. It has not made sizable inroads into the popularity of the 222. The Magnum does, however, handle 55 and 60 gr. bullets somewhat more easily and is thus slightly superior to the 222 when wind is an important factor or when a lot of shooting must be done at ranges from 225 to 275 yards.



## 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.290"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	20.0 gr.	20.8 gr.	21.6 gr.	22.3 gr.	23.0 gr.
IMR 3031	23.9 gr.	24.4 gr.	24.9 gr.	25.3 gr.	25.8 gr.
IMR 4064	24.6 gr.	25.2 gr.	25.8 gr.	26.4 gr.	27.0 gr.
BL-C2	24.6 gr.	25.4 gr.	26.2 gr.	27.0 gr.	27.8 gr.
H4895	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.
IMR 4320	25.2 gr.	26.3 gr.	27.3 gr.	28.3 gr.	29.3 gr.
H380	26.7 gr.	27.8 gr.	28.9 gr.	29.9 gr.	

## 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.305"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
H4198	19.4 gr.	20.3 gr.	21.2 gr.	22.1 gr.	23.0 gr.
IMR 3031	22.9 gr.	23.6 gr.	24.2 gr.	24.9 gr.	25.6 gr.
IMR 4064	23.8 gr.	24.5 gr.	25.1 gr.	25.8 gr.	26.4 gr.
BL-C2	22.6 gr.	23.7 gr.	24.8 gr.	25.8 gr.	26.9 gr.
H4895	24.3 gr.	25.1 gr.	25.8 gr.	26.5 gr.	27.2 gr.
IMR 4320	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.
H380	26.6 gr.	27.6 gr.	28.5 gr.	29.5 gr.	30.5 gr.

These data may also be used with the 22 cal. 50 gr. SX bullet.

 Indicates maximum load • use with caution



## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.325"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	19.1 gr.	20.1 gr.	21.0 gr.	22.0 gr.	
IMR 3031	22.3 gr.	23.1 gr.	23.9 gr.	24.7 gr.	25.5 gr.
IMR 4064	24.2 gr.	24.7 gr.	25.2 gr.	25.7 gr.	26.2 gr.
BL-C2	22.2 gr.	23.3 gr.	24.4 gr.	25.6 gr.	26.7 gr.
H4895	23.8 gr.	24.4 gr.	25.0 gr.	25.6 gr.	26.2 gr.
IMR 4320	25.0 gr.	25.7 gr.	26.4 gr.	27.1 gr.	27.8 gr.
H380			27.1 gr.	28.4 gr.	29.7

These data may also be used with the 22 cal. 55 gr. FMJ, 55 gr. SX, 53 gr. HP, and 52 gr. BTHP bullets.

222 REMINGTON MAGNUM

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

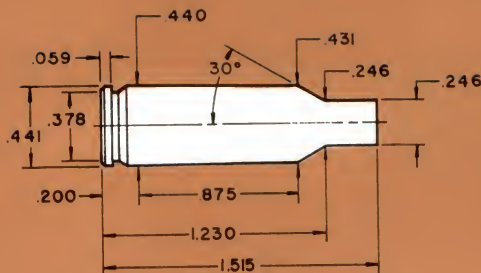
CARTRIDGE OVERALL LENGTH 2.310"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H4198		20.2 gr.	20.8 gr.	21.4 gr.	22.0 gr.
IMR 3031	22.4 gr.	23.0 gr.	23.6 gr.	24.3 gr.	25.0 gr.
IMR 4064	23.7 gr.	24.3 gr.	24.9 gr.	25.4 gr.	26.0 gr.
BL-C2	22.2 gr.	23.2 gr.	24.2 gr.	25.2 gr.	26.2 gr.
H4895	23.2 gr.	24.0 gr.	24.7 gr.	25.4 gr.	26.2 gr.
IMR 4320		24.9 gr.	25.7 gr.	26.4 gr.	27.2 gr.
H380		24.9 gr.	26.3 gr.	27.7 gr.	29.2 gr.

These data may also be used with the 22 cal. 60 gr. HP bullet.

*Indicates maximum load • use with caution*



## 22 PPC

**RIFLE:** WICHITA MINI

**BARREL:** 24", 1 in 14" TWIST

**CASE:** SAKO REFORMED

**PRIMER:** R-P 7½

The 22 PPC cartridge was designed by Dr. Louis Palmasano and Ferris Pindell in 1974. The intention was to design an extremely efficient bench rest cartridge. The cartridge is based on the 220 Russian case which has a smaller head size than the 308 and features a small rifle primer, which allegedly enhances accuracy. The fact that the PPC is steadily winning more bench rest matches across the country supports the theory of efficient case structure. Also, many bench rest shooters are necking up the 220 Russian case to 6mm and are enjoying equal success.

Our particular test rifle was built by Ferris Pindell and when tested, gave very fine results. All the powders listed performed admirably, but IMR 4198 and N201 showed the best uniformity from shot to shot, and also contributed the best accuracy. With the Hornady 53 grain Match Hollow Point and the 52 grain Match Boat Tail Hollow Point, five shot groups measuring .250" or less were easily obtained, if the shooter did his part.

# 22 CALIBER (.224" Dia.)

## 53 GRAIN HOLLOW POINT #2250

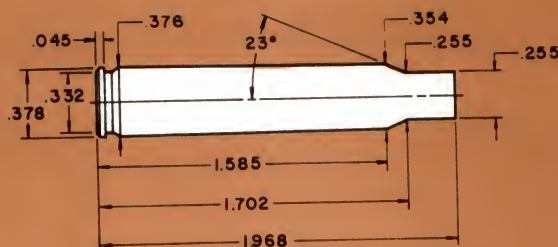
CARTRIDGE OVERALL LENGTH 2.065"



22 PPC

POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR4198	20.8 gr.	21.6 gr.	22.3 gr.	23.1 gr.	23.8 gr.	
RL-7	21.2 gr.	22.0 gr.	22.9 gr.			
H322	24.4 gr.	25.1 gr.	25.9 gr.	26.6 gr.		
N201	25.1 gr.	25.8 gr.	26.5 gr.	27.2 gr.	28.0 gr.	28.7 gr.
BL-C2	260 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.0 gr.	
WIN748	26.7 gr.	27.5 gr.	28.2 gr.	28.9 gr.		

These data may also be used with the 52 gr. HP match bullet.



## 5.6 X 50mm MAGNUM

**RIFLE: KRICO**

**BARREL: (23 5/8"), 1 in 13" TWIST**

**CASE: RWS**

**PRIMER: FEDERAL 205**

The 5.6 X 50 Magnum evolved from a rimmed version of the 222 Magnum (5.6 x 47R) developed in 1966 and 1967 by DWM. In 1968, DWM working with gunmaker Friedrich Wilhelm Heym, developed and introduced the 5.6 X 50R Magnum. This cartridge, .118 inches longer than the 222 Magnum, provided greater powder capacity and better down range energy. The primary reason for the development of the cartridge was to have a 22 caliber capable of enough remaining energy at 200 meters to take reh deer legally. The rimmed version was the first introduced because of the popularity of break open guns for hunting in Europe. In 1970 the rimless version was introduced for bolt action rifles.

In the U.S. the 5.6 X 50 Magnum is better suited as a varmint type cartridge. For this purpose, Hornady offers the 50 and 55 grain SX (Super Explosive) bullets. Add to this the rest of the 22 caliber Hornady bullets and the 5.6 X 50 Magnum is an excellent small game and varmint round.

The powders that performed best in our test weapon were IMR 4064, N202, and Win. 748. Best accuracy was obtained using IMR 4064 and N202 with Win. 748 achieving the highest velocities of those powders tested.



## 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.400"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	25.0 gr.	25.6 gr.	26.1 gr.	26.6 gr.	
N201	25.5 gr.	26.0 gr.	26.5 gr.	27.1 gr.	27.6 gr.
N202	25.8 gr.	26.5 gr.	27.2 gr.	27.8 gr.	28.5 gr.
IMR 4064	26.2 gr.	26.8 gr.	27.4 gr.	28.0 gr.	
WIN 748	26.4 gr.	27.2 gr.	28.0 gr.	28.7 gr.	29.5 gr.

## 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.400"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	25.1 gr.	25.7 gr.	26.3 gr.	26.8 gr.	
N201	25.4 gr.	26.0 gr.	26.7 gr.	27.3 gr.	27.9 gr.
N202	25.9 gr.	26.5 gr.	27.2 gr.	27.8 gr.	28.4 gr.
IMR 4064	26.2 gr.	26.8 gr.	27.5 gr.	28.1 gr.	
WIN 748	26.4 gr.	27.2 gr.	28.1 gr.	28.9 gr.	29.8 gr.

These data may also be used with the 22 cal. 50 gr. SX bullet.

## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.400"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	23.7 gr.	24.3 gr.	24.9 gr.	25.5 gr.	
N201	24.0 gr.	24.7 gr.	25.4 gr.	26.1 gr.	26.8 gr.
N202	24.3 gr.	25.1 gr.	25.8 gr.	26.6 gr.	27.4 gr.
IMR 4064	24.7 gr.	25.4 gr.	26.1 gr.	26.8 gr.	27.5 gr.
WIN 748	24.8 gr.	25.7 gr.	26.7 gr.	27.7 gr.	28.6 gr.

These data may also be used with the 55 gr. SX, 52 gr. HP match, and the 53 gr. HP bullets.

Indicates maximum load • use with caution

5.6 X 50mm MAGNUM

**22 CALIBER (.224" Dia.)**  
**60 GRAIN SPIRE POINT #2270**



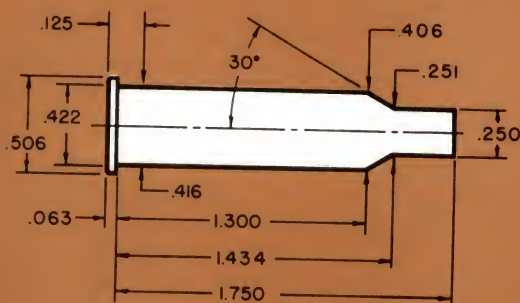
CARTRIDGE OVERALL LENGTH 2.400"

POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	23.6 gr.	24.2 gr.	24.9 gr.	25.5 gr.	
N201	24.1 gr.	24.9 gr.	25.6 gr.	26.4 gr.	
N202	24.3 gr.	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.
IMR 4064	24.9 gr.	25.6 gr.	26.4 gr.	27.1 gr.	27.8 gr.
WIN 748	25.2 gr.	26.1 gr.	27.0 gr.	27.8 gr.	28.7 gr.

These data may also be used with the 22 cal. 60 gr. HP bullet.



*Indicates maximum load • use with caution*



## 219 DONALDSON WASP

**RIFLE: CUSTOM MAUSER MODEL 1898**

**BARREL: 29", 1 in 14" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

The 219 Donaldson Wasp might be described as a sharper-shouldered blown-out 219 Zipper, for that case has most often been used to form brass for this early 'forties wildcat. Wasp cases, however, have also been made from 25-35, 30-30, and 22 High Power brass as well; and rimless versions of the Wasp have been made from 25 or 30 Remington rimless cases.

The Wasp reached its final form about 1941 after five to six years of experimenting by Harvey Donaldson, a well known shooter and wildcatter then and until his recent death. Early in its career the cartridge was used to win a number of important matches, and word of its accuracy — and long-range performance on varmints — helped it attract a respectable following in the 1940's.

Chambered in a good bolt action or single shot the Wasp is an accurate and deadly performer, and therein lay its advantage over the factory produced 219 Zipper. Zippers were chambered in lever actions which just couldn't shoot as effectively. As a comparison of loading data for both cartridges will indicate, ballistic performance of the pair is nearly identical.

When the 222 Remington appeared in 1950, a great many Wasp fanciers decided they'd rather spend more time shooting than forming cases, and the wildcat started into a decline from which it's never recovered. The sting is still in the Wasp, though, and it remains worth reloading.

## 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.210"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198		22.1 gr.	22.9 gr.	23.7 gr.	24.5 gr.
IMR 3031	24.8 gr.	25.4 gr.	26.1 gr.	26.7 gr.	27.3 gr.
IMR 4064	26.3 gr.	27.0 gr.	27.6 gr.	28.2 gr.	28.8 gr.
H4895		27.1 gr.	27.7 gr.	28.2 gr.	28.8 gr.
IMR 4320	26.8 gr.	27.4 gr.	28.0 gr.	28.7 gr.	29.3 gr.
BL-C2	26.9 gr.	27.5 gr.	28.2 gr.	28.8 gr.	
H380	28.7 gr.	29.4 gr.	30.2 gr.	30.9 gr.	31.6 gr.

## 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.200"



VELOCITY						
POWDER	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	21.3 gr.	22.0 gr.	22.8 gr.	23.5 gr.	24.2 gr.	
IMR 3031	24.0 gr.	24.7 gr.	25.5 gr.	26.3 gr.	27.0 gr.	27.8 gr.
IMR 4064	26.0 gr.	26.7 gr.	27.4 gr.	28.1 gr.	28.8 gr.	29.5 gr.
H4895	26.0 gr.	26.7 gr.	27.4 gr.	28.2 gr.	28.9 gr.	29.7 gr.
BL-C2		26.8 gr.	27.7 gr.	28.6 gr.		
IMR 4320	26.5 gr.	27.2 gr.	28.0 gr.	28.8 gr.	29.6 gr.	30.4 gr.
H380	28.2 gr.	29.2 gr.	30.2 gr.	31.2 gr.	32.2 gr.	

These data may also be used with the 22 cal. 50 gr. SX bullet.

*Indicates maximum load • use with caution*



## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.205"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.0 gr.	21.8 gr.	22.5 gr.	23.3 gr.	24.0 gr.	
IMR 3031	23.6 gr.	24.3 gr.	25.1 gr.	25.8 gr.	26.6 gr.	27.3 gr.
IMR 4064		26.0 gr.	26.7 gr.	27.5 gr.	28.2 gr.	28.9 gr.
H4895	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.1 gr.
BL-C2	25.0 gr.	25.9 gr.	26.9 gr.	27.8 gr.	28.8 gr.	
IMR 4320	25.7 gr.	26.6 gr.	27.4 gr.	28.2 gr.	29.1 gr.	29.9 gr.
H380	27.7 gr.	28.7 gr.	29.7 gr.	30.7 gr.	31.7 gr.	

These data may also be used with the 22 cal. 55 gr. SX, 55 gr. FMJ, 53 gr. HP, and 52 gr. HPBT Match bullets.

219 DONALDSON WASP

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

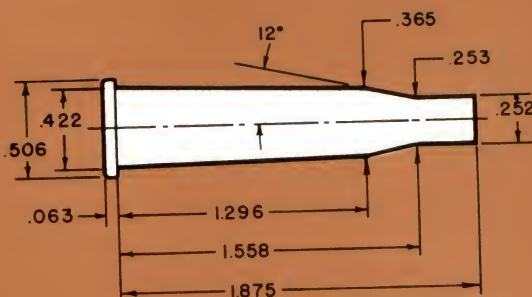
CARTRIDGE OVERALL LENGTH 2.195"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	21.0 gr.	21.8 gr.	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.
IMR 3031	23.6 gr.	24.3 gr.	25.0 gr.	25.8 gr.	26.5 gr.	27.2 gr.
IMR 4064	23.8 gr.	24.5 gr.	25.2 gr.	25.9 gr.	26.6 gr.	27.3 gr.
H4895	24.9 gr.	25.7 gr.	26.5 gr.	27.3 gr.	28.0 gr.	28.8 gr.
IMR 4320	25.3 gr.	26.1 gr.	26.8 gr.	27.5 gr.	28.3 gr.	29.0 gr.
BL-C2	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.3 gr.	29.2 gr.
H380	25.8 gr.	26.8 gr.	27.9 gr.	28.9 gr.	30.0 gr.	31.0 gr.

These data may also be used with the 22 cal. 60 gr. HP bullet.

Indicates maximum load • use with caution



## 219 ZIPPER

**RIFLE:** F. N. MAUSER CUSTOM

**BARREL:** 27", 1 in 14" TWIST

**CASE:** REMINGTON

**PRIMER:** RWS

Winchester introduced the 219 Zipper in 1937, seven years after the Hornet and two years after the powerful 220 Swift. Chambered in the firm's Model 64 lever action, varminting version of the famous Model 94, it never delivered the tack-driving accuracy its customers demanded, and consequently never became widely popular.

Winchester discontinued manufacturing the Model 64 after WWII and the 219 Zipper became an orphan in 1961 when Marlin stopped chambering its Model 336 for the cartridge. The Zipper is now completely a handloading proposition since both Remington and Winchester have discontinued producing ammunition.

A necked down 25-35 WCF (which can also be formed from 30-30 brass), the 219 Zipper was and is a ballistically respectable performer. Top velocities possible with the cartridge are only 100 fps lower than those which can be developed in the 224 Weatherby Varmintmaster.

The Hornady 53 gr. Hollow Point or the 55 gr. Spire Point are outstanding choices for reloading the 219 Zipper and the cartridge is large enough to propel the wind-bucking Hornady 60 gr. Spire Point, or Hollow Point, heaviest 22's in the line, up to an impressive 3300 fps. 4320 is a very good powder choice throughout the entire range of available bullet weights and especially with the heavier selections.

# 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.385"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	22.0 gr.	22.7 gr.	23.5 gr.	24.2 gr.	24.9 gr.
IMR 3031	24.8 gr.	25.6 gr.	26.3 gr.	27.0 gr.	27.8 gr.
BL-C2	25.7 gr.	26.5 gr.	27.4 gr.	28.2 gr.	29.1 gr.
H4895	26.7 gr.	27.4 gr.	28.2 gr.	28.9 gr.	29.6 gr.
IMR 4064	26.7 gr.	27.5 gr.	28.2 gr.		
IMR 4320	27.2 gr.	28.0 gr.	28.7 gr.	29.5 gr.	30.2 gr.
H380	28.6 gr.	29.6 gr.	30.6 gr.	31.6 gr.	

219 ZIPPER

# 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.390"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	21.8 gr.	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.	
IMR 3031	24.5 gr.	25.3 gr.	26.1 gr.	26.8 gr.	27.6 gr.	28.4 gr.
BL-C2	25.8 gr.	26.6 gr.	27.3 gr.	28.1 gr.		
IMR 4064	26.2 gr.	26.9 gr.	27.6 gr.	28.3 gr.	29.0 gr.	
H4895	26.0 gr.	26.9 gr.	27.7 gr.	28.5 gr.	29.4 gr.	30.2 gr.
IMR 4320	26.8 gr.	27.6 gr.	28.3 gr.	29.1 gr.	29.9 gr.	30.6 gr.
H380	28.2 gr.	29.2 gr.	30.1 gr.	31.1 gr.	32.0 gr.	

These data may also be used with the 22 cal. 50 gr. SX bullet.

Indicates maximum load • use with caution

## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.410"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	21.2 gr.	22.0 gr.	22.8 gr.	23.7 gr.	24.5 gr.	
IMR 3031	24.0 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	
BL-C2	24.8 gr.	25.7 gr.	26.5 gr.	27.3 gr.	28.2 gr.	
H4895	25.0 gr.	25.9 gr.	26.8 gr.	27.7 gr.	28.6 gr.	29.5 gr.
IMR 4064	25.2 gr.	26.0 gr.	26.9 gr.	27.7 gr.		
IMR 4320	25.9 gr.	26.8 gr.	27.6 gr.	28.5 gr.	29.4 gr.	30.2 gr.
H380	27.2 gr.	28.2 gr.	29.3 gr.	30.3 gr.		

These data may also be used with the 22 cal. 55 gr. SX, 55 gr. FMJ, 53 gr. HP, and 52 gr. HPBT Match bullets.

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

CARTRIDGE OVERALL LENGTH 2.410"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
H4198	20.1 gr.	20.9 gr.	21.8 gr.	22.6 gr.	23.5 gr.	
IMR 3031	22.3 gr.	23.2 gr.	24.1 gr.	24.9 gr.	25.8 gr.	
BL-C2	23.2 gr.	24.1 gr.	24.9 gr.	25.8 gr.	26.6 gr.	
H4895	23.9 gr.	24.8 gr.	25.6 gr.	26.5 gr.	27.4 gr.	
IMR 4064	24.0 gr.	24.9 gr.	25.8 gr.	26.6 gr.	27.5 gr.	28.3 gr.
IMR 4320	24.8 gr.	25.7 gr.	26.6 gr.	27.5 gr.	28.4 gr.	29.4 gr.
H380	25.6 gr.	26.7 gr.	27.8 gr.	28.9 gr.	30.0 gr.	31.1 gr.

These data may also be used with the 22 cal., 60 gr. HP bullet.

 Indicates maximum load • use with caution





## 22 CALIBER (.224" Dia.) 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.425"



POWDER	VELOCITY			
	3400 fps	3500 fps	3600 fps	3700 fps
H4198	25.4 gr.	26.4 gr.	27.4 gr.	
IMR 3031	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.
IMR 4064	31.4 gr.	32.0 gr.	32.6 gr.	33.1 gr.
WIN 748			32.6 gr.	33.9 gr.
H4895	31.6 gr.	32.2 gr.	32.8 gr.	33.4 gr.
BL-C2	30.7 gr.	31.9 gr.	33.1 gr.	
IMR 4320	31.3 gr.	32.2 gr.	33.2 gr.	34.1 gr.
H380	33.6 gr.	34.4 gr.	35.2 gr.	36.0 gr.
WIN 760	36.1 gr.	37.1 gr.	38.0 gr.	39.0 gr.

## 22 CALIBER (.224" Dia.) 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.420"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4198	26.4 gr.	27.3 gr.	28.2 gr.	29.1 gr.		
IMR 3031	29.0 gr.	29.8 gr.	30.5 gr.	31.2 gr.	32.0 gr.	32.7 gr.
IMR 4064	30.6 gr.	31.4 gr.	32.2 gr.	33.0 gr.	33.7 gr.	34.5 gr.
H4895	30.9 gr.	31.7 gr.	32.4 gr.	33.2 gr.	34.0 gr.	34.8 gr.
BL-C2		30.4 gr.	32.1 gr.	33.8 gr.		
IMR 4320	30.8 gr.	31.8 gr.	32.7 gr.	33.7 gr.	34.6 gr.	
WIN 748		32.8 gr.	33.9 gr.	34.9 gr.	36.0 gr.	
H380	32.9 gr.	34.0 gr.	35.0 gr.	36.1 gr.	37.1 gr.	
WIN 760		36.3 gr.	37.4 gr.	38.4 gr.	39.5 gr.	

These data may also be used with the 50 gr. SX bullet.

 Indicates maximum load • use with caution

# **22 CALIBER (.224" Dia.)** **55 GRAIN SPIRE POINT #2265**

CARTRIDGE OVERALL LENGTH 2.420"



225 WINCHESTER

POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4198	26.1 gr.	27.0 gr.	27.9 gr.	28.8 gr.		
IMR 3031	28.5 gr.	29.3 gr.	30.0 gr.	30.8 gr.	31.6 gr.	
IMR 4064	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	32.9 gr.	33.7 gr.
H4895	30.0 gr.	30.8 gr.	31.7 gr.	32.5 gr.	33.4 gr.	34.2 gr.
BL-C2		29.8 gr.	31.1 gr.	32.3 gr.	33.5 gr.	
IMR 4320	29.6 gr.	30.7 gr.	31.8 gr.	32.9 gr.	34.0 gr.	35.1 gr.
WIN 748		32.5 gr.	33.5 gr.	34.6 gr.	35.6 gr.	
H380	32.0 gr.	33.1 gr.	34.2 gr.	35.2 gr.	36.3 gr.	
WIN 760	35.6 gr.	36.4 gr.	37.1 gr.	37.8 gr.		

These data may also be used with the 22 cal. 55 gr. FMJ, 55 gr. SX, 53 gr. HP, and 52 gr. BTHP bullets.

# **22 CALIBER (.224" Dia.)** **60 GRAIN SPIRE POINT #2270**

CARTRIDGE OVERALL LENGTH 2.410"

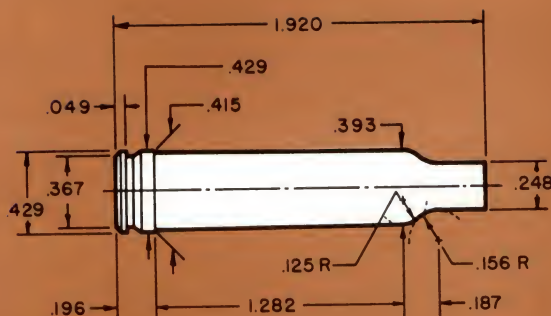


POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	25.0 gr.	26.0 gr.	27.0 gr.			
IMR 3031	27.5 gr.	28.3 gr.	29.0 gr.	29.8 gr.	30.6 gr.	
IMR 4064	29.0 gr.	29.7 gr.	30.4 gr.	31.1 gr.	31.8 gr.	
H4895	28.8 gr.	29.6 gr.	30.5 gr.	31.3 gr.	32.2 gr.	33.0 gr.
BL-C2	28.3 gr.	29.5 gr.	30.6 gr.	31.8 gr.		
IMR 4320	29.3 gr.	30.0 gr.	30.8 gr.	31.5 gr.	32.2 gr.	
WIN 748	30.1 gr.	31.1 gr.	32.1 gr.	33.1 gr.	34.2 gr.	35.2 gr.
H380	31.0 gr.	32.0 gr.	33.0 gr.	34.0 gr.	35.0 gr.	
WIN 760	33.8 gr.	34.8 gr.	35.7 gr.	36.7 gr.	37.6 gr.	

These data may also be used with the 22 cal. 60 gr. HP bullet.

Indicates maximum load • use with caution





## 224 WEATHERBY MAGNUM

**RIFLE: WEATHERBY**

**BARREL: 26", 1 in 14" TWIST**

**CASE: WEATHERBY**

**PRIMER: FEDERAL 210**

The 224 Weatherby made its debut in 1963 in a scaled down Mark V action. This cartridge rounds out the complete line of Weatherby Magnums. The cartridge is capable of 225 Winchester ballistics and is one of the better high performance varmint rounds commercially available. However, it would be a more popular varmint round if it was based on a conventional case instead of a belted case.

As is readily noticeable, the data for the 45 grain Spire Point shows lower maximum velocity than the 50 grain Spire Point. The 45 grain bullet was designed expressly for 22 Hornet velocities, and consequently, with the jacket construction being very thin, the 45 grain Spire Point comes apart or keyholes when fired at velocities exceeding 3600 fps.

When loading for any of the Weatherby cartridges, accuracy can sometimes be improved by seating the bullet farther out of the case. Most Weatherbys incorporate a great deal of freebore and by seating the bullet closer to the rifling, the bullet has less chance of yawing before engaging the rifling, thus accuracy improves. Our particular firearm showed a very strong preference to Norma 201. IMR 3031 and 4064 showed excellent shot to shot uniformity, but accuracy was not on par with N201.



## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.375"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
RELODER 7	24.9 gr.	25.6 gr.	26.3 gr.	26.9 gr.	27.6 gr.
IMR 3031	27.2 gr.	27.8 gr.	28.5 gr.	29.1 gr.	29.8 gr.
NORMA 201	28.0 gr.	28.7 gr.	29.4 gr.	30.1 gr.	30.8 gr.
IMR 4895	28.1 gr.	28.8 gr.	29.5 gr.	30.2 gr.	30.9 gr.
H335	28.3 gr.	29.0 gr.	29.8 gr.	30.6 gr.	31.3 gr.
IMR 4064	29.0 gr.	29.6 gr.	30.1 gr.	30.7 gr.	31.3 gr.
WIN 760	32.4 gr.	33.3 gr.	34.2 gr.	35.1 gr.	36.1 gr.

224 WEATHERBY MAGNUM

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.375"



POWDER	VELOCITY						
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
RELODER 7	25.8 gr.	26.6 gr.	27.3 gr.	28.1 gr.	28.9 gr.	29.6 gr.	
IMR 3031	28.0 gr.	28.8 gr.	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.	
IMR 4895	28.7 gr.	29.5 gr.	30.4 gr.	31.3 gr.	32.1 gr.	33.0 gr.	
NORMA 201	29.2 gr.	30.0 gr.	30.7 gr.	31.4 gr.	32.2 gr.	32.9 gr.	33.6 gr.
H335	29.3 gr.	30.1 gr.	31.0 gr.	31.9 gr.	32.7 gr.	33.6 gr.	34.5 gr.
IMR 4064	29.6 gr.	30.2 gr.	30.9 gr.	31.5 gr.	32.1 gr.	32.8 gr.	
WIN 748	31.6 gr.	32.2 gr.	32.9 gr.	33.6 gr.	34.2 gr.	34.9 gr.	35.6 gr.
WIN 760	33.6 gr.	34.7 gr.	35.8 gr.	36.9 gr.	38.0 gr.		

These data may also be used with the 22 cal. 50 gr. SX bullet.

Indicates maximum load • use with caution

## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.375"



POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
RELODER 7	25.0 gr.	25.9 gr.	26.7 gr.	27.6 gr.	28.4 gr.	
IMR 3031	28.2 gr.	28.9 gr.	29.6 gr.	30.3 gr.	31.0 gr.	31.7 gr.
NORMA 201	28.4 gr.	29.3 gr.	30.2 gr.	31.0 gr.	31.9 gr.	32.8 gr.
IMR 4895	28.7 gr.	29.5 gr.	30.3 gr.	31.1 gr.	31.9 gr.	32.7 gr.
IMR 4064	28.8 gr.	29.6 gr.	30.4 gr.	31.3 gr.	32.1 gr.	32.9 gr.
H335	29.1 gr.	29.9 gr.	30.8 gr.	31.6 gr.	32.4 gr.	
WIN 748	30.7 gr.	31.5 gr.	32.2 gr.	33.0 gr.	33.8 gr.	34.5 gr.
WIN 760	33.1 gr.	34.2 gr.	35.3 gr.	36.4 gr.	37.5 gr.	38.6 gr.

These data may also be used with the 22 cal. 55 gr. SX, 52 gr. HP match, 53 gr. HP, and 55 gr. FMJ bullets.

## 22 CALIBER (.224" Dia.) 55 GRAIN FMJ (Full Metal Jacket) #2267

CARTRIDGE OVERALL LENGTH 2.350"

REDUCED LOADS



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4227	13.4 gr.	14.2 gr.	15.0 gr.	15.9 gr.	16.7 gr.	17.6 gr.

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

CARTRIDGE OVERALL LENGTH 2.375"

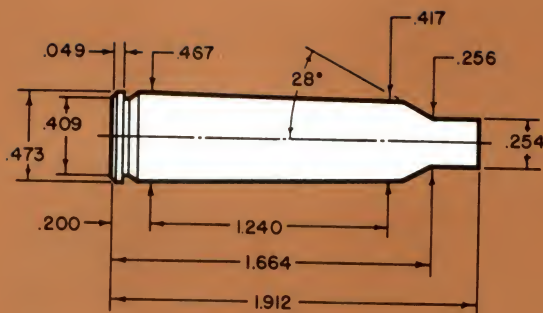


POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
RELODER 7	24.5 gr.	25.4 gr.	26.4 gr.	27.3 gr.	28.2 gr.	
IMR 3031	27.3 gr.	28.1 gr.	28.9 gr.	29.6 gr.	30.4 gr.	
NORMA 201	27.6 gr.	28.6 gr.	29.6 gr.	30.5 gr.	31.5 gr.	32.5 gr.
IMR 4895	27.8 gr.	28.7 gr.	29.6 gr.	30.6 gr.	31.5 gr.	32.4 gr.
IMR 4064	28.1 gr.	28.9 gr.	29.7 gr.	30.5 gr.	31.3 gr.	32.1 gr.
H335	28.4 gr.	29.2 gr.	30.1 gr.	31.0 gr.	31.9 gr.	
WIN 748	30.3 gr.	31.1 gr.	31.8 gr.	32.6 gr.	33.4 gr.	
WIN 760	32.5 gr.	33.6 gr.	34.7 gr.	36.9 gr.	38.0 gr.	

These data may also be used with the 22 cal. 60 gr. HP bullet.



*Indicates maximum load • use with caution*



## 22-250 REMINGTON

**RIFLE: REMINGTON 700**

**BARREL: 24", 1 in 14" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 210**

The 22-250 Remington is based on the necked down 250-3000 case with the shoulder angle changed to 28 degrees. In 1967, thirty years after the original wildcat versions, Remington began production of this cartridge in their Model 700 series rifles.

The 22-250 is only slightly less powerful than the 220 Swift and is more versatile; the 22-250 more readily handles reduced loads. This potent 22 caliber cartridge has been used for a great variety of game from varmints to deer. Of course, the 22-250 is best suited for varminting.

The powders that gave the most uniform results with best accuracy throughout the range of bullets were IMR 3031, IMR 4895, and IMR 4064. Winchester 760 gave the highest velocities with fair accuracy and may be a top choice in a different rifle. Persons using the 45 grain Hornet bullet should note that the maximum velocity listed is only 3600 fps. The reason for this phenomenon lies in the construction of the bullet. It is designed to expand at 22 Hornet velocities and therefore has too thin a jacket to be fired at velocities higher than 3600 fps. At velocities exceeding 3600 fps, bullets sometimes come apart before they reach the target. As in any of the larger 22's, the heavier bullets are normally the best choice for optimum performance. The data listed for the 55 grain Spire Point can also be used for the 53 grain Hollow Point Match, 52 grain Boat Tail Hollow Point Match, 55 grain SX, and the 55 grain Full Metal Jacket. Pressure tests reveal that changing lot numbers of powder would make a greater pressure/velocity change than interchanging the various bullets previously mentioned.



## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.350"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	30.2 gr.	31.0 gr.	31.8 gr.	32.6 gr.	33.4 gr.
IMR 4895	30.8 gr.	31.6 gr.	32.4 gr.	33.2 gr.	34.0 gr.
H335	30.5 gr.	31.5 gr.	32.6 gr.	33.6 gr.	34.6 gr.
IMR 4064	31.8 gr.	32.5 gr.	33.3 gr.	34.1 gr.	34.9 gr.
IMR 4320	32.3 gr.	33.1 gr.	33.9 gr.	34.6 gr.	35.4 gr.
N202	31.6 gr.	32.6 gr.	33.5 gr.	34.5 gr.	35.5 gr.
WIN 748	33.3 gr.	34.2 gr.	35.0 gr.	35.9 gr.	36.7 gr.
WIN 760	34.0 gr.	35.0 gr.	36.0 gr.	37.1 gr.	38.1 gr.
N204	36.9 gr.	37.7 gr.	38.5 gr.	39.4 gr.	40.2 gr.
H414	37.0 gr.	37.8 gr.	38.7 gr.	39.5 gr.	40.4 gr.

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.350"



POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 3031	31.8 gr.	32.7 gr.	33.6 gr.	34.5 gr.	35.4 gr.	
IMR 4895	32.3 gr.	33.2 gr.	34.1 gr.	35.1 gr.		
IMR 4064	33.1 gr.	34.0 gr.	34.9 gr.	35.8 gr.	36.7 gr.	
H335	32.9 gr.	33.9 gr.	34.9 gr.	35.9 gr.	36.9 gr.	37.9 gr.
N202	33.0 gr.	34.1 gr.	35.2 gr.	36.3 gr.		
IMR 4320	33.9 gr.	34.8 gr.	35.7 gr.			
WIN 748	34.7 gr.	35.7 gr.	36.7 gr.	37.7 gr.	38.7 gr.	
WIN 760	36.0 gr.	37.2 gr.	38.4 gr.	39.5 gr.	40.7 gr.	41.9 gr.
N204	38.6 gr.	39.4 gr.	40.3 gr.	41.2 gr.	42.0 gr.	
H414	38.8 gr.	39.6 gr.	40.4 gr.	41.3 gr.	42.1 gr.	43.0 gr.

These data may also be used with the 22 cal. 50 gr. SX bullet.



*Indicates maximum load • use with caution*



## 22 CALIBER (.224" Dia.)

### 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.350"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 3031	31.0 gr.	32.1 gr.	33.1 gr.	34.2 gr.		
IMR 4895	31.4 gr.	32.5 gr.	33.6 gr.	34.6 gr.		
H335	32.0 gr.	33.2 gr.	34.3 gr.	35.4 gr.		
IMR 4064	32.7 gr.	33.6 gr.	34.5 gr.	35.4 gr.	36.3 gr.	
N202	31.5 gr.	33.0 gr.	34.4 gr.	35.9 gr.		
IMR 4320	33.4 gr.	34.4 gr.	35.3 gr.			
WIN 748	33.4 gr.	34.7 gr.	35.9 gr.	37.1 gr.		
WIN 760		36.5 gr.	37.7 gr.	39.0 gr.	40.2 gr.	41.4 gr.
H414	37.6 gr.	38.6 gr.	39.6 gr.	40.6 gr.	41.5 gr.	
N204	37.8 gr.	38.8 gr.	39.7 gr.	40.6 gr.		

These data may also be used with the 22 cal. 55 gr. SX, 55 gr. FMJ, 53 gr. HP, and 52 gr. BTHP Match bullets.

22-250 REMINGTON

## 22 CALIBER (.224" Dia.)

### 55 GRAIN FMJ (Full Metal Jacket) #2267

CARTRIDGE OVERALL LENGTH 2.350"



REDUCED LOADS

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4227	13.9 gr.	14.8 gr.	15.7 gr.	16.6 gr.	17.6 gr.	18.5 gr.

Indicates maximum load • use with caution

**22 CALIBER (.224" Dia.)**

**60 GRAIN HOLLOW POINT #2275**

CARTRIDGE OVERALL LENGTH 2.450"

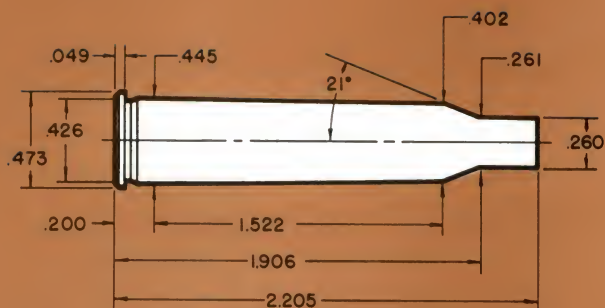


POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	29.2 gr.	30.4 gr.	31.5 gr.	32.6 gr.	33.7 gr.	
IMR 4895	29.6 gr.	30.7 gr.	31.7 gr.	32.8 gr.	33.9 gr.	35.0 gr.
N202	29.1 gr.	30.5 gr.	31.9 gr.	33.4 gr.	34.8 gr.	
IMR 4064	30.6 gr.	31.6 gr.	32.7 gr.	33.8 gr.	34.8 gr.	35.9 gr.
H335	30.3 gr.	31.6 gr.	32.9 gr.	34.2 gr.		
IMR 4320	31.5 gr.	32.5 gr.	33.6 gr.	34.6 gr.		
WIN 748	30.7 gr.	32.1 gr.	33.6 gr.	35.1 gr.	36.5 gr.	
WIN 760		34.7 gr.	36.0 gr.	37.4 gr.	38.7 gr.	40.1 gr.
H414	35.5 gr.	36.6 gr.	37.6 gr.	38.7 gr.	39.7 gr.	40.7 gr.
N204	36.0 gr.	37.0 gr.	38.0 gr.	39.0 gr.	40.0 gr.	

These data may also be used with the 22 cal. 60 gr. SP bullet.



*Indicates maximum load • use with caution*



## 220 SWIFT

**RIFLE: RUGER 77**

**BARREL: 26", 1 in 14" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

In 1935 Winchester introduced the 220 Swift in their Model 54 bolt action rifle. The Swift is based on the semi-rimmed 6mm Lee Navy case necked down to 22 caliber with less body taper and a sharper shoulder.

Because of a great deal of bad publicity as a barrel burner, the popularity of the cartridge gradually faded. This ill-fame stemmed mainly from the extreme pressures at which it originally operated. However, with loads reduced slightly (one hundred feet per second or so) barrel and case life is as good as any other cartridge with an equivalent powder capacity.

The 220 Swift has been used on game varying in size from varmints to deer, but is best suited as a varmint cartridge. Using Hornady varmint bullets, the Swift is an excellent 300-400 yard varmint.

Ruger and Sako have helped revive the popularity of the Swift by chambering rifles for this venerable round. At the time of this writing, the only commercially available loaded U.S. ammunition for the Swift is produced by Frontier Cartridge Company.

Best overall results in our rifle were obtained with IMR 4320, H414, and the heavier bullets (55 grain Spire Point and 60 grain Spire Point). Contrary to popular belief, we encountered no loading problems, along with completely normal case life.

## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.680"



POWDER	VELOCITY			
	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4895	32.6 gr.	33.4 gr.	34.2 gr.	34.9 gr.
IMR 4064	33.2 gr.	34.1 gr.	34.9 gr.	35.7 gr.
IMR 4320	34.0 gr.	34.7 gr.	35.5 gr.	36.3 gr.
N202	34.4 gr.	35.1 gr.	35.9 gr.	36.7 gr.
WIN 760	36.3 gr.	37.2 gr.	38.1 gr.	39.0 gr.
IMR 4350	37.4 gr.	38.2 gr.	39.1 gr.	39.9 gr.
H414	38.5 gr.	39.3 gr.	40.1 gr.	40.9 gr.
N204	38.9 gr.	39.7 gr.	40.5 gr.	41.4 gr.

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.680"



POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4895	33.4 gr.	34.3 gr.	35.2 gr.	36.0 gr.	36.9 gr.	
IMR 4064	33.9 gr.	34.7 gr.	35.6 gr.	36.5 gr.	37.4 gr.	38.2 gr.
N202		35.2 gr.	36.3 gr.	37.4 gr.	38.4 gr.	
IMR 4320	34.3 gr.	35.4 gr.	36.4 gr.	37.5 gr.	38.5 gr.	
WIN 760	37.3 gr.	38.2 gr.	39.1 gr.	40.0 gr.	40.9 gr.	
IMR 4350	38.2 gr.	38.9 gr.	39.7 gr.	40.5 gr.	41.3 gr.	
H414	39.2 gr.	40.1 gr.	41.0 gr.	41.8 gr.	42.7 gr.	43.6 gr.
N204	39.3 gr.	40.2 gr.	41.2 gr.	42.1 gr.	43.0 gr.	44.0 gr.

These data may also be used with the 22 cal 50 gr. SX bullet.



*Indicates maximum load • use with caution*



## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.680"



VELOCITY						
POWDER	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4895	32.1 gr.	33.2 gr.	34.2 gr.	35.3 gr.		
IMR 4064	33.3 gr.	34.2 gr.	35.2 gr.	36.1 gr.	37.0 gr.	37.9 gr.
N202		34.9 gr.	35.9 gr.	36.8 gr.	37.7 gr.	38.7 gr.
IMR 4320	34.1 gr.	35.1 gr.	36.0 gr.	36.9 gr.		
WIN 760	36.0 gr.	37.1 gr.	38.2 gr.	39.3 gr.	40.3 gr.	
IMR 4350	37.7 gr.	38.5 gr.	39.2 gr.	40.0 gr.	40.7 gr.	41.5 gr.
H414	37.7 gr.	38.6 gr.	39.6 gr.	40.5 gr.	41.4 gr.	
N204	38.8 gr.	39.7 gr.	40.5 gr.	41.4 gr.	42.2 gr.	

These data may also be used with the 55 gr. SX, 55 gr. FMJ, 52 gr. BTHP match, and the 53 gr. HP bullets.

## 22 CALIBER (.224" Dia.) 55 GRAIN FMJ (Full Metal Jacket) #2267

CARTRIDGE OVERALL LENGTH 2.680"



REDUCED LOADS

VELOCITY						
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4227	12.8 gr.	13.7 gr.	14.7 gr.	15.6 gr.	16.6 gr.	17.6 gr.

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

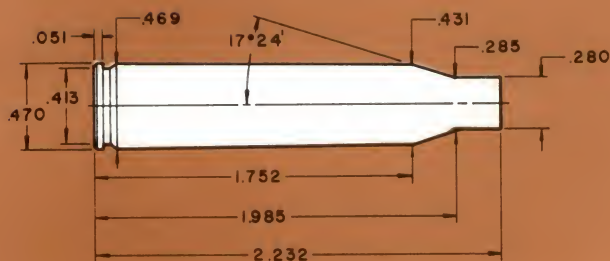
CARTRIDGE OVERALL LENGTH 2.680"



VELOCITY						
POWDER	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4895	31.2 gr.	32.2 gr.	33.3 gr.	34.4 gr.		
IMR 4064	31.7 gr.	32.6 gr.	33.6 gr.	34.6 gr.	35.6 gr.	
IMR 4320	33.2 gr.	34.2 gr.	35.2 gr.	36.3 gr.		
N202		33.7 gr.	34.8 gr.	36.0 gr.	37.2 gr.	
WIN 760	34.9 gr.	36.2 gr.	37.5 gr.	38.8 gr.	40.0 gr.	
H414	35.7 gr.	36.9 gr.	38.1 gr.	39.2 gr.	40.4 gr.	
IMR 4350	36.7 gr.	37.6 gr.	38.4 gr.	39.2 gr.	40.1 gr.	40.9 gr.
N204	37.8 gr.	38.7 gr.	39.5 gr.	40.4 gr.	41.3 gr.	

These data may also be used with the 22 cal. 60 gr. HP bullet.

Indicates maximum load • use with caution



## 5.6 × 57mm RWS

**RIFLE: MAUSER 66**

**BARREL: 1 in 10" TWIST**

**CASE: RWS**

**PRIMER: FEDERAL 210**

The 5.6 X 57mm was designed in Germany by RWS in the years 1963-1964 expressly for hunting reh deer and gams (chamois). In Germany there is a range limit at which game can be taken, plus a remaining energy level minimum; the 5.6 × 57mm was designed to meet these standards. Its cartridge case has very thick neck walls, and for a good reason. Adapter units for 22 WMR and 22 LR are very popular in Europe. For this reason the thick neck wall was necessary to handle higher case-neck pressures.

The extra thickness of the brass in this particular cartridge presented a slight problem with reloading. During testing the case neck did not expand to seal the chamber until the powder charge was within 3 grains of maximum. Powder residue was present on the exterior of the cases up to that point, but accuracy and uniformity were not affected.

Because of the fast twist, 1:10", as compared to most 22 calibers being 1:14", 22 caliber Hornady SX bullets should not be used. Due to the high rotational speed, the very thin jacketed bullets blow up before they reach the target. All regular Spire Point bullets work very well, with the best results obtained from the heavier 55 grain and 60 grain Spire Points.

Best results were obtained with the Hornady 55 grain Spire Point and IMR 4320. Loaded properly, this cartridge will perform ballistically as well, and better in some instances, than the 220 Swift or any other modern commercial 22 caliber.

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 2.716"



POWDER	VELOCITY					
	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps	4000 fps
N203	35.7 gr.	36.4 gr.	37.2 gr.	37.9 gr.	38.6 gr.	39.4 gr.
IMR 4320		36.9 gr.	38.0 gr.	39.1 gr.	40.1 gr.	
WIN 760		40.0 gr.	41.1 gr.	42.3 gr.	43.5 gr.	
IMR 4350	39.6 gr.	40.4 gr.	41.3 gr.			
N204	41.7 gr.	42.6 gr.	43.4 gr.	44.2 gr.	45.1 gr.	45.9 gr.

## 22 CALIBER (.224" Dia.)

### 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 2.716"



POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
N203	34.0 gr.	35.0 gr.	36.0 gr.	37.0 gr.	38.1 gr.	
IMR 4320	35.9 gr.	36.8 gr.	37.7 gr.	38.5 gr.	39.4 gr.	
IMR 4350	38.5 gr.	39.5 gr.	40.4 gr.	41.3 gr.		
WIN 760	38.8 gr.	39.8 gr.	40.8 gr.	41.9 gr.	42.9 gr.	
N204	40.6 gr.	41.5 gr.	42.4 gr.	43.3 gr.	44.3 gr.	45.2 gr.

These data may also be used with the 55 gr. FMJ, 53 gr. HP, and 52 gr. BTHP Match bullets.

## 22 CALIBER (.224" Dia.)

### 60 GRAIN HOLLOW POINT #2275

CARTRIDGE OVERALL LENGTH 2.735"

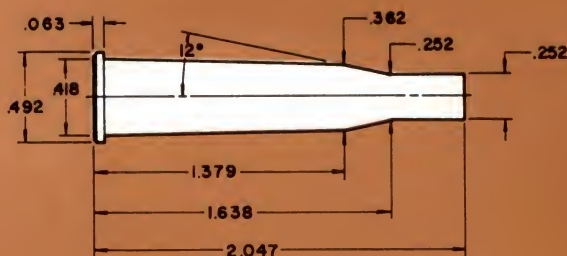


POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
N203	31.2 gr.	32.6 gr.	34.1 gr.	35.6 gr.	37.0 gr.	
IMR 4320	34.3 gr.	35.4 gr.	36.6 gr.	37.7 gr.	38.8 gr.	
WIN 760	37.3 gr.	38.4 gr.	39.6 gr.	40.7 gr.	41.9 gr.	
IMR 4350	37.9 gr.	38.7 gr.	39.5 gr.	40.4 gr.	41.2 gr.	
N204	39.0 gr.	40.0 gr.	41.1 gr.	42.1 gr.	43.1 gr.	44.2 gr.

These data may also be used with the 22 cal. 60 gr. SP bullet.

Indicates maximum load • use with caution





## 5.6 × 52R (22 SAVAGE HIGH-POWER)

RIFLE: MAUSER 66

**BARREL: 1 in 10<sup>5</sup>/<sub>8</sub>" TWIST**

### CASE: RWS

PRIMER: FEDERAL 210

The 5.6 × 52R, as it is designated in Europe, or 22 Savage High-Power in the U.S., was designed by Charles Newton and was introduced commercially by Savage Arms Company in 1912. The case is based on the 25-35 necked down to 22 caliber. The cartridge has long been obsolete in the U.S. and Europe. Our test rifle, a Mauser Model 66, was a special order.

The 5.6 × 52R uses the Hornady .227" diameter 70 grain Spire Point bullet. Note: Do not use this 22 caliber bullet in other 22's as dangerous pressures will occur due to its larger diameter (.227" as opposed to standard .224").

It was originally intended as a varmint and deer sized cartridge, but it was soon evident that it was better for varmint than deer. Its use should remain primarily as a varmint and small game round.

If using the following data for lever action or combination guns, the reloader should drop maximum charges by at least 10%, since this data was obtained through the use of a modern bolt action rifle.

Best results in the area of accuracy and uniformity were obtained with IMR 3031 and N201.



**22 CALIBER (.227" Dia.)**  
**70 GRAIN SPIRE POINT #2280**

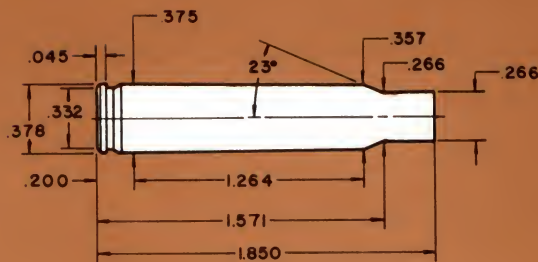
CARTRIDGE OVERALL LENGTH 2.510"



POWDER	VELOCITY							
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4198			20.2 gr.	21.1 gr.	22.1 gr.	23.1 gr.		
RELOADER 7	19.8 gr.	20.5 gr.	21.3 gr.	22.1 gr.	22.9 gr.	23.6 gr.		
N201	22.0 gr.	22.9 gr.	23.8 gr.	24.8 gr.	25.7 gr.	26.7 gr.	27.6 gr.	
IMR 3031	22.1 gr.	23.0 gr.	23.8 gr.	24.7 gr.	25.6 gr.	26.5 gr.	27.4 gr.	
N203	22.4 gr.	23.4 gr.	24.4 gr.	25.3 gr.	26.3 gr.	27.3 gr.	28.3 gr.	29.3 gr.

The loads shown were developed in a modern bolt action. For use in lever action or combination guns the maximum loads should be dropped at least 10%.

**5.6 x 52R (22 SAVAGE HIGH-POWER)**



6 X 47mm

RIFLE: REMINGTON 40X

**BARREL: 27", 1 in 14" TWIST**

**CASE: FEDERAL**

**PRIMER: REMINGTON 7½**

The 6 X 47mm is a wildcat cartridge that is nothing more than the 222 Magnum necked up to 6mm. Its original intent was as a bench rest cartridge, and that is solely how it remains. The only company that chambers the 6 X 47mm is Remington, and it is available in only the 40-XB action. No manufacturer provides loaded ammunition for the 6 X 47mm at the present time.

In bench rest circles the 6mm caliber has become increasingly popular. The main reasons are improved wind resistance over the 22's and less recoil than the 308's. The 6 X 47mm is not the most popular 6mm in the bench rest game, but it has accounted for many wins and shows that the potential is there. Also, the 6 X 47mm has all the attributes necessary for a good varmint cartridge, and the only existing problem is lack of support from the firearms industry.

The powders that performed best in our test firearm were IMR 4198, BL-C2, and Winchester 748. Winchester 748 is becoming more popular with bench rest shooters because of its uniformity from one lot to the next. Best accuracy was obtained using the Hornady 75 grain Hollow Point and Winchester 748.

Warning: The loading data presented here is maximum for our rifle and components. Maximum loads should be approached by small increments because of the high loading density of this small cartridge. During our testing, primers other than R-P 7½'s were substituted at various intervals, resulting in many pierced primers before maximum loads were obtained. If any components are changed when working with a maximum load, the load should be reduced and slowly developed again.

6mm (.243" Dia.)

## 70 GRAIN SPIRE POINT #2410

CARTRIDGE OVERALL LENGTH 2.460"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RL-7	20.3 gr.	21.2 gr.	22.0 gr.			
IMR 4198	20.6 gr.	21.5 gr.	22.4 gr.	23.3 gr.	24.3 gr.	
H322	23.0 gr.	23.8 gr.	24.6 gr.	25.4 gr.		
N201	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.	
IMR 4895	25.3 gr.	26.1 gr.	26.9 gr.	27.7 gr.		
BL-C2	25.4 gr.	26.4 gr.	27.4 gr.	28.4 gr.		
WIN 748	26.3 gr.	27.2 gr.	28.0 gr.	28.9 gr.	29.7 gr.	30.6 gr.

6mm (.243" Dia.)

## 75 GRAIN HOLLOW POINT #2420

CARTRIDGE OVERALL LENGTH 2.445"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
RL-7	19.1 gr.	20.0 gr.	20.9 gr.	21.9 gr.		
IMR 4198	19.3 gr.	20.2 gr.	21.2 gr.	22.1 gr.	23.1 gr.	24.1 gr.
H322	21.6 gr.	22.5 gr.	23.3 gr.	24.1 gr.	24.9 gr.	
N201	23.0 gr.	23.9 gr.	24.7 gr.	25.5 gr.	26.4 gr.	27.2 gr.
IMR 4895	23.8 gr.	24.6 gr.	25.4 gr.	26.3 gr.	27.1 gr.	27.9 gr.
BL-C2	24.0 gr.	24.9 gr.	25.8 gr.	26.7 gr.	27.6 gr.	28.5 gr.
WIN 748	23.9 gr.	24.9 gr.	25.9 gr.	26.9 gr.	27.9 gr.	28.9 gr.

6mm (.243" Dia.)

## 87 GRAIN SPIRE POINT #2440

CARTRIDGE OVERALL LENGTH 2.485"

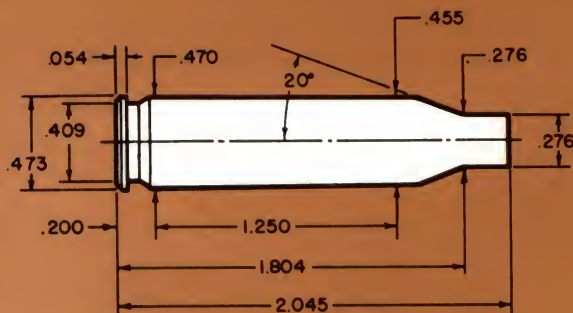


POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4198	19.5 gr.	20.4 gr.	21.3 gr.	22.2 gr.	
IMR 3031	22.6 gr.	23.4 gr.	24.2 gr.	25.0 gr.	25.8 gr.
H335	22.7 gr.	23.7 gr.	24.6 gr.	25.5 gr.	
IMR 4895	23.1 gr.	24.0 gr.	24.9 gr.	25.8 gr.	
WIN 748	24.0 gr.	24.9 gr.	25.8 gr.	26.7 gr.	27.6 gr.

These data may also be used with the 6mm 87 gr. BTHP.

 Indicates maximum load • use with caution





## 243 WINCHESTER

**RIFLE: WINCHESTER 70**

**BARREL: 22", 1 in 10" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 210**

The 243, a 6mm cartridge necked down from the 308 case, was introduced in 1955 by Winchester. The versatility and accuracy of the 243 soon elevated it to levels of popularity not to be exceeded by any other round in its class. Much of the original acclaim about the all-around capabilities of the 243 can be credited to the late Warren Page.

This potent 6mm cartridge is suitable for game ranging from prairie dogs to deer. Hornady offers three explosive varmint bullets for all phases of varminting: the 70 grain Spire Point, the 75 grain Hollow Point, and the 87 grain Spire Point. The 80 grain Full Metal Jacket was designed with the hide hunter in mind and the 100 grain Spire Point and 100 grain Round Nose were constructed to give good penetration and controlled expansion in deer sized game.

During our testing, several powders performed very well. Those powders were IMR 3031, IMR 4064, IMR 4831, Winchester 785, and Norma MRP with the very best groups and uniformity obtained from IMR 3031 and Winchester 785. Slow burning powders such as 4350 and Winchester 785 are not safe when loaded with reduced charges. Lighter charges of a slow burning propellant often cause detonation. In some instances primers are blown, bolts stick, or even stocks are splintered. At any rate, this detonation problem only exists with lower charges of slow burning powder and we do not recommend such use in the 243.



6mm (.243" Dia.)

70 GRAIN SPIRE POINT #2410

CARTRIDGE OVERALL LENGTH 2.650"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	35.8 gr.	36.8 gr.	37.9 gr.	39.0 gr.	40.0 gr.	41.1 gr.
IMR 4895	36.2 gr.	37.3 gr.	38.4 gr.	39.5 gr.	40.6 gr.	
IMR 4064	37.0 gr.	38.1 gr.	39.2 gr.	40.3 gr.	41.4 gr.	42.5 gr.
IMR 4320	37.7 gr.	38.8 gr.	39.9 gr.	41.0 gr.	42.0 gr.	43.1 gr.
N204	43.7 gr.	44.8 gr.	45.9 gr.	47.0 gr.	48.1 gr.	49.2 gr.
IMR 4831	43.8 gr.	44.9 gr.	46.0 gr.	47.1 gr.	48.2 gr.	49.4 gr.
NORMA MRP	45.5 gr.	46.7 gr.	47.9 gr.	49.2 gr.	50.4 gr.	51.7 gr.
WIN 785	46.9 gr.	48.1 gr.	49.2 gr.	50.4 gr.	51.6 gr.	52.8 gr.
H450		47.8 gr.	49.2 gr.	50.6 gr.	52.0 gr.	53.4 gr.

243 WINCHESTER

6mm (.243" Dia.)

75 GRAIN HOLLOW POINT #2420

CARTRIDGE OVERALL LENGTH 2.640"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	36.0 gr.	37.2 gr.	38.3 gr.	39.5 gr.		
IMR 4895	36.1 gr.	37.4 gr.	38.7 gr.	39.9 gr.		
IMR 4064	36.8 gr.	38.1 gr.	39.4 gr.	40.7 gr.	41.9 gr.	
IMR 4320	37.7 gr.	38.9 gr.	40.2 gr.	41.4 gr.	42.6 gr.	
N204	43.4 gr.	44.6 gr.	45.7 gr.	46.9 gr.	48.0 gr.	
IMR 4831	44.0 gr.	45.0 gr.	46.0 gr.	47.1 gr.	48.1 gr.	49.1 gr.
NORMA MRP	45.4 gr.	46.6 gr.	47.8 gr.	48.9 gr.	50.1 gr.	
WIN 785	46.8 gr.	48.0 gr.	49.2 gr.	50.4 gr.	51.6 gr.	
H450	46.5 gr.	47.9 gr.	49.3 gr.	50.7 gr.	52.1 gr.	

Indicates maximum load • use with caution

**6mm (.243" Dia.)**

**80 GRAIN FMJ (Full Metal Jacket) #2430**

**CARTRIDGE OVERALL LENGTH 2.600"**



VELOCITY						
POWDER	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	33.5 gr.	34.8 gr.	36.0 gr.	37.3 gr.	38.5 gr.	39.8 gr.
IMR 4895	34.0 gr.	35.3 gr.	36.6 gr.	37.9 gr.	39.2 gr.	
IMR 4064	35.5 gr.	36.6 gr.	37.8 gr.	38.9 gr.	40.1 gr.	41.3 gr.
IMR 4320	34.9 gr.	36.3 gr.	37.6 gr.	38.9 gr.	40.2 gr.	41.5 gr.
IMR 4831	41.5 gr.	42.7 gr.	43.9 gr.	45.1 gr.	46.2 gr.	47.4 gr.
N204	41.4 gr.	42.6 gr.	43.9 gr.	45.2 gr.	46.4 gr.	
NORMA MRP		44.3 gr.	45.5 gr.	46.7 gr.	48.0 gr.	49.2 gr.
H450			46.5 gr.	47.9 gr.	49.3 gr.	50.8 gr.
WIN 785	44.6 gr.	45.9 gr.	47.1 gr.	48.4 gr.	49.7 gr.	50.9 gr.

**REDUCED LOADS**

VELOCITY						
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR 4759	16.8 gr.	18.3 gr.	19.8 gr.	21.2 gr.	22.7 gr.	24.2 gr.

**6mm (.243" Dia.)**

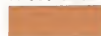
**87 GRAIN SPIRE POINT #2440**

**CARTRIDGE OVERALL LENGTH 2.640"**



VELOCITY						
POWDER	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	34.0 gr.	35.3 gr.	36.6 gr.	37.9 gr.		
IMR 4895	34.6 gr.	35.8 gr.	37.1 gr.	38.3 gr.		
IMR 4064	35.4 gr.	36.7 gr.	37.9 gr.	39.2 gr.		
IMR 4320	35.8 gr.	37.1 gr.	38.4 gr.	39.7 gr.		
IMR 4831	41.1 gr.	42.4 gr.	43.7 gr.	45.0 gr.	46.3 gr.	
N204	41.4 gr.	42.7 gr.	43.9 gr.	45.2 gr.		
NORMA MRP	43.5 gr.	44.7 gr.	46.0 gr.	47.2 gr.	48.5 gr.	
H450		45.0 gr.	46.4 gr.	47.8 gr.	49.3 gr.	50.7 gr.
WIN 785	44.6 gr.	45.9 gr.	47.3 gr.	48.6 gr.	50.0 gr.	

These data may also be used with the 87 gr. BTHP.



*Indicates maximum load • use with caution*

6mm (.243" Dia.)

100 GRAIN SPIRE POINT #2450

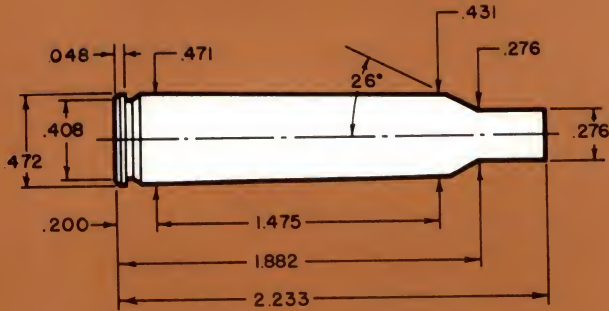
CARTRIDGE OVERALL LENGTH 2.630"



243 WINCHESTER

POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	32.1 gr.	33.5 gr.	35.0 gr.			
IMR 4895	32.6 gr.	34.0 gr.	35.3 gr.			
IMR 4064	33.6 gr.	34.9 gr.	36.2 gr.	37.5 gr.		
IMR 4320	34.2 gr.	35.5 gr.	36.8 gr.	38.2 gr.		
IMR 4350		39.0 gr.	40.1 gr.	41.4 gr.		
IMR 4831	38.9 gr.	40.1 gr.	41.3 gr.	42.6 gr.		
N204	39.0 gr.	40.3 gr.	41.6 gr.			
NORMA MRP	39.8 gr.	41.3 gr.	42.8 gr.	44.4 gr.	45.9 gr.	
WIN 785	42.3 gr.	43.6 gr.	44.9 gr.	46.2 gr.	47.4 gr.	
H450		42.3 gr.	43.8 gr.	45.2 gr.	46.7 gr.	48.2 gr.

These data may also be used with the 6mm 100 gr. RN and 100 gr. BTSP, though overall length may vary.



## 6mm REMINGTON (244)

**RIFLE:** REMINGTON 700

**BARREL:** 22", 1 in 9" TWIST

**CASE:** REMINGTON

**PRIMER:** REMINGTON 9½

The 6mm Remington was introduced by Remington in 1963 to replace the original 1955 version, the 244. The two cartridges are identical in every way and are based on the 7 x 57mm case necked down with the shoulder angle increased by about 5 degrees. The 244, as it was introduced, had a twist rate of 1:12", which left it unable to stabilize the long 100 grain Spire Point bullets and thereby reduced the versatility of the round. However, Hornady offers a 100 grain Round Nosed bullet for the rifles with a 1:12" twist. As a result, the 243 Winchester gained all the fame and glory in the 6mm caliber. When Remington finally changed to a 1:9" twist and renamed the cartridge, the shooting public became interested. Now the 6mm Remington rates very close to the 243 in popularity, as rightfully it should. Ballistically speaking, the 6mm Remington has a very slight advantage over the 243, but the difference is not enough to show a significant advantage on game animals.

As with the 243, the popularity of this round is based on its ability to perform both as a medium game and varmint cartridge. With the wide range of Hornady bullets and a wide variety of powders from which to choose, the 6mm Remington is an exciting and effective round.

IMR 4064 and IMR 4831 produced the best groups and gave the most uniform results during our testing. Winchester 785 also performed very well with the 100 grain Spire Point.



6mm (.243" Dia.)

70 GRAIN SPIRE POINT #2410

CARTRIDGE OVERALL LENGTH 2.825"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	36.8 gr.	38.0 gr.	39.1 gr.	40.3 gr.	41.5 gr.	
IMR 4064	38.2 gr.	39.4 gr.	40.6 gr.	41.8 gr.	43.0 gr.	
H4895	38.6 gr.	39.9 gr.	41.2 gr.	42.4 gr.	43.7 gr.	
IMR 4320	39.9 gr.	41.1 gr.	42.3 gr.	43.6 gr.	44.8 gr.	
H380	40.6 gr.	41.8 gr.	43.1 gr.	44.3 gr.	45.5 gr.	
WIN 760	43.2 gr.	44.5 gr.	45.9 gr.	47.2 gr.	48.5 gr.	
IMR 4350	43.8 gr.	44.8 gr.	45.9 gr.	46.9 gr.	47.9 gr.	48.9 gr.
N204	45.0 gr.	46.1 gr.	47.2 gr.	48.3 gr.	49.4 gr.	50.5 gr.

6mm (.243" Dia.)

75 GRAIN HOLLOW POINT #2420

CARTRIDGE OVERALL LENGTH 2.825"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	35.7 gr.	37.0 gr.	38.3 gr.	39.6 gr.	40.8 gr.	
IMR 4064	37.5 gr.	38.7 gr.	40.0 gr.	41.2 gr.	42.5 gr.	
H4895	38.1 gr.	39.4 gr.	40.7 gr.	41.9 gr.	43.2 gr.	
IMR 4320	38.5 gr.	39.9 gr.	41.3 gr.	42.6 gr.	43.9 gr.	
H380	39.9 gr.	41.2 gr.	42.6 gr.	43.9 gr.	45.3 gr.	
WIN 760	42.8 gr.	44.3 gr.	45.8 gr.	47.4 gr.	48.9 gr.	
IMR 4350	43.1 gr.	44.2 gr.	45.3 gr.	46.4 gr.	47.5 gr.	48.6 gr.
N204	44.3 gr.	45.5 gr.	46.7 gr.	47.8 gr.	49.0 gr.	

Indicates maximum load • use with caution

**6mm (.243" Dia.)**

**80 GRAIN FMJ (Full Metal Jacket) #2430**

**CARTRIDGE OVERALL LENGTH 2.810"**



VELOCITY						
POWDER	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 3031	35.2 gr.	36.7 gr.	38.2 gr.	39.6 gr.		
IMR 4895	36.1 gr.	37.3 gr.	38.5 gr.	39.7 gr.	40.9 gr.	
IMR 4064	36.5 gr.	37.9 gr.	39.4 gr.	40.8 gr.		
IMR 4320	37.3 gr.	38.7 gr.	40.1 gr.	41.4 gr.	42.8 gr.	
H380	38.2 gr.	39.6 gr.	40.9 gr.	42.3 gr.	43.7 gr.	
WIN 760	40.1 gr.	41.7 gr.	43.2 gr.	44.8 gr.	46.3 gr.	
IMR 4350	40.6 gr.	41.8 gr.	43.1 gr.	44.4 gr.	45.7 gr.	47.0 gr.
IMR 4831	43.8 gr.	44.9 gr.	46.0 gr.	47.1 gr.	48.2 gr.	49.3 gr.
H4831	45.3 gr.	46.4 gr.	47.5 gr.	48.7 gr.	49.8 gr.	

**REDUCED LOADS**

VELOCITY						
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
SR 4759	19.4 gr.	20.7 gr.	22.1 gr.	23.4 gr.	24.7 gr.	26.0 gr.

**6mm (.243" Dia.)**

**87 GRAIN SPIRE POINT #2440**

**CARTRIDGE OVERALL LENGTH 2.810"**



VELOCITY					
POWDER	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	34.3 gr.	35.7 gr.	37.1 gr.	38.5 gr.	
IMR 4064	35.5 gr.	37.1 gr.	38.7 gr.	40.3 gr.	
H4895	36.7 gr.	38.0 gr.	39.4 gr.	40.7 gr.	42.0 gr.
IMR 4320	37.3 gr.	38.7 gr.	40.1 gr.	41.5 gr.	42.8 gr.
H380		40.3 gr.	41.5 gr.	42.8 gr.	44.1 gr.
IMR 4350	40.6 gr.	41.9 gr.	43.2 gr.	44.5 gr.	45.8 gr.
WIN 760	41.5 gr.	43.1 gr.	44.7 gr.	46.2 gr.	47.8 gr.
N204	42.8 gr.	43.9 gr.	45.1 gr.	46.2 gr.	47.4 gr.
H4831	46.0 gr.	47.2 gr.	48.3 gr.	49.5 gr.	

These data may also be used with the 87 gr. BTHP.

*Indicates maximum load • use with caution*

6mm (.243" Dia.)

100 GRAIN SPIRE POINT #2450

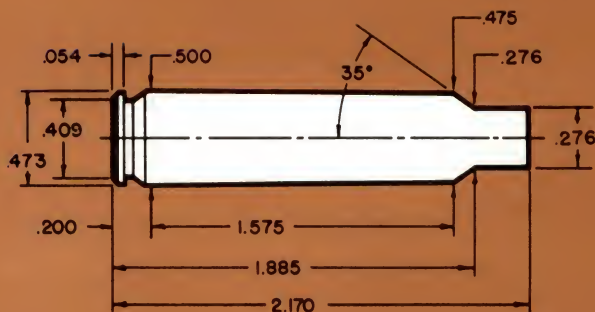
CARTRIDGE OVERALL LENGTH 2.810"



6mm REMINGTON (244)

POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	31.5 gr.	33.0 gr.	34.5 gr.	36.0 gr.		
IMR 4064	32.7 gr.	34.2 gr.	35.7 gr.	37.1 gr.	38.6 gr.	
H4895	33.3 gr.	34.7 gr.	36.2 gr.	37.5 gr.		
IMR 4320	33.5 gr.	35.1 gr.	36.7 gr.	38.3 gr.		
H380	35.3 gr.	36.8 gr.	38.2 gr.			
IMR 4350	37.4 gr.	38.7 gr.	40.1 gr.	41.4 gr.	42.7 gr.	
WIN 760	38.0 gr.	39.5 gr.	40.9 gr.	42.3 gr.	43.8 gr.	
N204	38.7 gr.	40.0 gr.	41.2 gr.	42.5 gr.	43.8 gr.	
IMR 4831	40.1 gr.	41.3 gr.	42.6 gr.	43.9 gr.	45.1 gr.	
H4831	41.7 gr.	43.0 gr.	44.3 gr.	45.7 gr.	47.0 gr.	48.3 gr.
WIN 785	41.5 gr.	43.0 gr.	44.5 gr.	46.0 gr.	47.5 gr.	

These data may also be used with the 6mm 100 gr. RN and 100 gr. BTSP, though overall length may vary.



## 6mm/284

**RIFLE: FN MAUSER CUSTOM**

**BARREL: 26", 1 in 10" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

The 1963 introduction of the 284 Winchester brought forth a furious round of wildcatting on the new cartridge, and the 6mm/284 was perhaps the best (and most logical) development to emerge from the process.

The 6mm/284 has greater powder capacity than either the 6mm Remington or 243 Winchester, but velocity gains possible with the wildcat are marginal — at least in our test experience.

As interest in the 284 Winchester cartridge has waned, so has enthusiasm for necking it down one millimeter to create the 6mm/284; and since the first 6mm/284's were developed, a much larger 243 caliber cartridge has appeared on the commercial market — the 240 Weatherby Magnum. It is highly improbable that the 6mm/284, with its limited advantages relative to standard factory 6mm cartridges, will ever see commercial development.

6mm/284's with at least a 1 in 10" twist will handle the full range of Hornady 6mm bullets quite well, making this wildcat suitable both for varmints and light game. Hornady game bullets, in this as in other calibers, are designed with thicker jackets for better penetration and can be identified by their distinctive cannelures.



6mm (.243" Dia.)

70 GRAIN SPIRE POINT #2410

CARTRIDGE OVERALL LENGTH 2.765"



6mm/284

POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	33.9 gr.	35.5 gr.	37.0 gr.	38.6 gr.	40.2 gr.	
IMR 4064	36.3 gr.	37.8 gr.	39.3 gr.	40.8 gr.		
H4895	36.8 gr.	38.3 gr.	39.9 gr.	41.4 gr.	43.0 gr.	
IMR 4320	37.5 gr.	39.0 gr.	40.5 gr.	42.0 gr.	43.5 gr.	45.0 gr.
IMR 4350			44.7 gr.	46.3 gr.	47.9 gr.	49.5 gr.
H4831				50.0 gr.	51.2 gr.	52.5 gr.

6mm (.243" Dia.)

75 GRAIN HOLLOW POINT #2420

CARTRIDGE OVERALL LENGTH 2.795"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4320	39.1 gr.	40.5 gr.	41.9 gr.	43.3 gr.	44.7 gr.	
IMR 4350	43.1 gr.	44.7 gr.	46.3 gr.			
H4831	45.9 gr.	47.5 gr.	49.2 gr.	50.8 gr.	52.4 gr.	54.1 gr.
H450	47.6 gr.	49.1 gr.	50.7 gr.	52.2 gr.		

6mm (.243" Dia.)

87 GRAIN SPIRE POINT #2440

CARTRIDGE OVERALL LENGTH 2.825"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4320	37.2 gr.	38.9 gr.	40.7 gr.	42.5 gr.	44.3 gr.	
IMR 4350	39.0 gr.	41.2 gr.	43.4 gr.	45.6 gr.	47.8 gr.	
H4831	42.2 gr.	44.1 gr.	46.0 gr.	47.9 gr.	49.8 gr.	51.7 gr.

These data may also be used with the 87 gr. BTHP.

Indicates maximum load • use with caution

**6mm (.243" Dia.)**  
**100 GRAIN SPIRE POINT #2450**

CARTRIDGE OVERALL LENGTH 2.710"

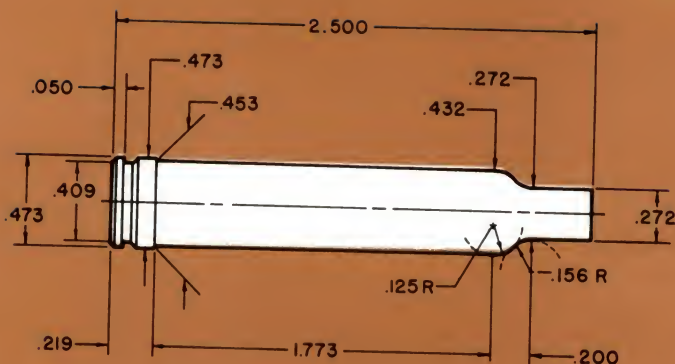


VELOCITY						
POWDER	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	37.3 gr.	38.8 gr.	40.3 gr.	41.8 gr.	43.3 gr.	
IMR 4350		42.8 gr.	44.3 gr.	45.9 gr.	47.4 gr.	49.0 gr.
H4831	43.4 gr.	45.0 gr.	46.6 gr.	48.2 gr.	49.8 gr.	51.4 gr.

These data may also be used with the 6mm 100 gr. RN and 100 gr. BTSP, though overall length may vary.



*Indicates maximum load • use with caution*



## 240 WEATHERBY MAGNUM

**RIFLE:** WEATHERBY MARK V

**BARREL:** 26", 1 in 10" TWIST

**CASE:** WEATHERBY

**PRIMER:** FEDERAL 210

The 240 Weatherby Magnum is the most powerful of all the factory loaded 6mm's commercially available; it has enough added powder capacity that it can drive a 100 grain Spire Point at a velocity 300 fps faster than either the 243 or the 6mm Remington.

In size, the 240 case head is the same as the 30-06 and has nearly identical powder capacity. The case is belted and features the familiar Weatherby double radius shoulder. The 240 Weatherby is chambered in Weatherby's deluxe Mark V rifle.

A host of powder-bullet combinations worked well in our firearm, but the powder that proved best with all bullets was Winchester 785. This powder produced velocities of 3900 fps with the 70 grain Spire Point and 3300 fps with the 100 grain Spire Point. As testimony that our bullets perform exceedingly well in the 240, Hornady bullets are loaded in Weatherby's commercially loaded ammunition.

As in all Weatherby rifles, each barrel has more freebore than most standard commercial rifles and bullets must be seated farther out of the case to be close to the rifling. This frequently improves accuracy. Also, hunting rifles with light weight barrels tend to heat up rapidly when fired many times in succession. This can cause a change in impact and larger groups, as was evident with our test rifle.

6mm (.243" Dia.)

70 GRAIN SPIRE POINT #2410



CARTRIDGE OVERALL LENGTH 3.075"

POWDER	VELOCITY					
	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4064	42.9 gr.	44.4 gr.	45.9 gr.	47.4 gr.	48.9 gr.	50.4 gr.
IMR 4320	45.2 gr.	46.4 gr.	47.5 gr.	48.7 gr.	49.9 gr.	
WIN 760	47.8 gr.	49.2 gr.	50.7 gr.	52.2 gr.	53.7 gr.	
IMR 4350	48.6 gr.	49.8 gr.	51.0 gr.	52.1 gr.	53.3 gr.	
IMR 4831	51.1 gr.	52.3 gr.	53.4 gr.	54.6 gr.	55.8 gr.	57.0 gr.
NORMA MRP	52.4 gr.	53.9 gr.	55.4 gr.	56.9 gr.	58.3 gr.	
WIN 785	53.6 gr.	54.9 gr.	56.2 gr.	57.5 gr.	58.8 gr.	60.1 gr.
H450	50.9 gr.	53.0 gr.	55.1 gr.	57.2 gr.	59.3 gr.	

6mm (.243" Dia.)

75 GRAIN HOLLOW POINT #2420



CARTRIDGE OVERALL LENGTH 3.075"

POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
IMR 4064	42.5 gr.	43.9 gr.	45.4 gr.	46.9 gr.	48.4 gr.	
IMR 4320	44.1 gr.	45.4 gr.	46.7 gr.	48.1 gr.	49.4 gr.	50.7 gr.
IMR 4350	47.2 gr.	48.4 gr.	49.6 gr.	50.8 gr.	52.0 gr.	
WIN 760	47.7 gr.	48.9 gr.	50.1 gr.	51.4 gr.	52.6 gr.	
IMR 4831	49.7 gr.	50.9 gr.	52.2 gr.	53.4 gr.	54.7 gr.	55.9 gr.
NORMA MRP	52.2 gr.	53.5 gr.	54.7 gr.	56.0 gr.	57.3 gr.	58.5 gr.
WIN 785	52.2 gr.	53.6 gr.	54.9 gr.	56.2 gr.	57.6 gr.	58.9 gr.
H450	51.4 gr.	53.0 gr.	54.5 gr.	56.1 gr.	57.7 gr.	59.2 gr.

*Indicates maximum load • use with caution*



**6mm (.243" Dia.)**

**80 GRAIN FMJ (Full Metal Jacket) #2430**

CARTRIDGE OVERALL LENGTH 3.030"



**240 WEATHERBY MAGNUM**

VELOCITY						
POWDER	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4064	41.1 gr.	42.7 gr.	44.4 gr.	46.0 gr.	47.6 gr.	
IMR 4320	42.4 gr.	43.9 gr.	45.5 gr.	47.0 gr.	48.6 gr.	
WIN 760	45.8 gr.	47.3 gr.	48.9 gr.	50.5 gr.	52.0 gr.	
IMR 4350	46.8 gr.	48.0 gr.	49.3 gr.	50.6 gr.	51.8 gr.	
IMR 4831	48.0 gr.	49.4 gr.	50.8 gr.	52.2 gr.	53.6 gr.	
NORMA MRP	50.7 gr.	52.1 gr.	53.5 gr.	54.9 gr.	56.3 gr.	57.7 gr.
H450	49.1 gr.	50.9 gr.	52.6 gr.	54.4 gr.	56.1 gr.	57.9 gr.
WIN 785	51.1 gr.	52.6 gr.	54.1 gr.	55.5 gr.	57.0 gr.	58.4 gr.

**REDUCED LOADS**

VELOCITY						
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4198	19.3 gr.	20.9 gr.	22.5 gr.	24.0 gr.	25.6 gr.	27.2 gr.

**6mm (.243" Dia.)**

**87 GRAIN SPIRE POINT #2440**

CARTRIDGE OVERALL LENGTH 3.075"



VELOCITY						
POWDER	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	41.0 gr.	42.6 gr.	44.1 gr.	45.7 gr.	47.3 gr.	
IMR 4320	42.5 gr.	43.7 gr.	44.9 gr.	46.0 gr.	47.2 gr.	
WIN 760	44.8 gr.	46.8 gr.	48.8 gr.			
IMR 4350	45.6 gr.	47.0 gr.	48.4 gr.	49.8 gr.	51.2 gr.	
IMR 4831	47.0 gr.	48.4 gr.	49.8 gr.	51.2 gr.	52.7 gr.	54.1 gr.
H450	48.9 gr.	50.4 gr.	51.9 gr.	53.4 gr.	54.9 gr.	
NORMA MRP	49.6 gr.	51.1 gr.	52.6 gr.	54.1 gr.	55.6 gr.	57.0 gr.
WIN 785	49.4 gr.	51.0 gr.	52.5 gr.	54.1 gr.	55.7 gr.	57.2 gr.

These data may also be used with the 6mm 87 gr. BTHP.

*Indicates maximum load • use with caution*

**6mm (.243" Dia.)**

**100 GRAIN SPIRE POINT #2450**

**CARTRIDGE OVERALL LENGTH 3.075"**

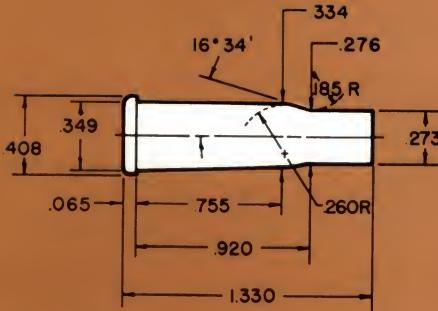


POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	39.0 gr.	40.6 gr.	42.3 gr.	44.0 gr.		
IMR 4320	40.3 gr.	41.9 gr.	43.4 gr.	45.0 gr.		
WIN 760	43.0 gr.	44.7 gr.	46.3 gr.	48.0 gr.		
IMR 4350	43.2 gr.	44.6 gr.	46.0 gr.	47.5 gr.	48.9 gr.	
IMR 4831	44.5 gr.	46.1 gr.	47.7 gr.	49.3 gr.	50.8 gr.	52.4 gr.
WIN 785	46.5 gr.	48.1 gr.	49.7 gr.	51.3 gr.	52.9 gr.	
NORMA MRP	46.9 gr.	48.4 gr.	50.0 gr.	51.5 gr.	53.1 gr.	
H450	47.0 gr.	48.3 gr.	49.6 gr.	51.0 gr.		

These data may also be used with the 6mm 100 gr. RN and 100 gr. BTSP, though overall length may vary.



*Indicates maximum load • use with caution*



## 25-20 WCF

**RIFLE: WINCHESTER MODEL 1892**

**BARREL: 24", 1 in 16" TWIST**

**CASE: REMINGTON**

**PRIMER: WINCHESTER 6½**

The 25-20 WCF is a rimmed bottle necked cartridge that is based on the 32-20 case necked down to 25 caliber. It was introduced about 1893 by Winchester for their lever action Model 92. Prior to the advent of the 22 Hornet and the 218 Bee it was a very popular varmint round.

Hornady makes the only bullet available to the reloader for the 25-20, the 60 grain Soft Point, a bullet designed to expand effectively at 25-20 velocities; it should be used only for small game and varmints. Tubular magazines prevent the use of any pointed 25 caliber bullets.

**25 CALIBER (.257" Dia.)**

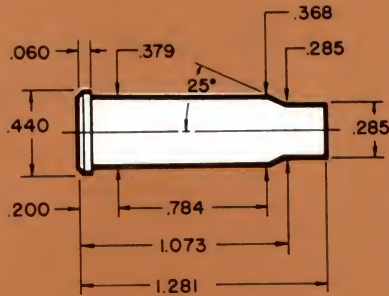
**60 GRAIN SOFT POINT #2510**

CARTRIDGE OVERALL LENGTH 1.380"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
WIN 630	8.3 gr.	8.8 gr.	9.3 gr.	9.8 gr.	10.3 gr.	
2400	9.2 gr.	9.7 gr.	10.2 gr.	10.6 gr.	11.1 gr.	11.5 gr.
H4227	10.0 gr.	10.5 gr.	11.0 gr.	11.5 gr.	11.9 gr.	

Indicates maximum load • use with caution



## 256 WINCHESTER MAGNUM

**RIFLE:** MARLIN MODEL 62

**BARREL:** 24", 1 in 14" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 116

The 256 Winchester Magnum is a cartridge based on a necked down 357 Magnum case. It is perhaps most notable for the speed with which it flopped.

Introduced in 1961 in the unique Ruger "Hawkeye" pistol (see the Pistol Data section for loads for use in this firearm), it was originally conceived as a high velocity handgun round suitable for long-range varmint shooting. The 22 Remington Jet had apparently whetted some interest in this kind of shooting, and it was believed that this interest signified a good potential market for new arms and ammo.

Marlin promptly (1962) saw the suitability of the new 256 Winchester Magnum as a rifle cartridge and began chambering its lever action Model 62 for the round. Velocities up to 600 fps higher were possible in the longer barrel, and heavier bullets (75 and 87 grains) could be loaded to better advantage.

Shooters received all these developments with a yawn, and both Ruger and Marlin soon discontinued producing firearms for the 256 Winchester. As a pistol cartridge it was selling into a highly over estimated market; as a rifle cartridge the 256 simply couldn't match the versatility and performance potential of a host of older varmint cartridges.



## 25 CALIBER (.257" Dia.)

### 60 GRAIN SOFT POINT #2510

CARTRIDGE OVERALL LENGTH 1.560"



VELOCITY						
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
UNIQUE	8.1 gr.	8.6 gr.	9.1 gr.			
HERCO	9.0 gr.	9.5 gr.	10.1 gr.			
2400		12.7 gr.	13.3 gr.	13.9 gr.	14.5 gr.	15.1 gr.
H4227		13.6 gr.	14.2 gr.	14.8 gr.	15.5 gr.	16.1 gr.
H4198	15.3 gr.	15.8 gr.	16.3 gr.			

## 25 CALIBER (.257" Dia.)

### 75 GRAIN HOLLOW POINT #2520

CARTRIDGE OVERALL LENGTH 1.720"



VELOCITY						
POWDER	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
HERCO	8.7 gr.	9.5 gr.				
H110	10.5 gr.	11.2 gr.				
2400	10.6 gr.	11.5 gr.	12.3 gr.	13.2 gr.	14.0 gr.	
H4227		12.0 gr.	12.7 gr.	13.5 gr.	14.2 gr.	15.0 gr.
H4198	13.9 gr.	14.5 gr.	15.2 gr.	15.8 gr.		

## 22 CALIBER (.257" Dia.)

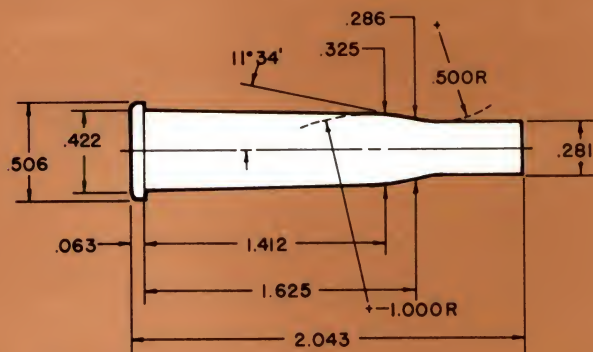
### 87 GRAIN SPIRE POINT #2530

CARTRIDGE OVERALL LENGTH 1.775"



VELOCITY						
POWDER	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
H110	10.0 gr.	10.7 gr.	11.4 gr.	12.1 gr.		
2400		10.6 gr.	11.4 gr.	12.3 gr.		
H4227			12.1 gr.	12.9 gr.	13.7 gr.	14.6 gr.
H4198	12.8 gr.	13.6 gr.	14.4 gr.			

Indicates maximum load • use with caution



## 25-35 WINCHESTER (25 REMINGTON)

**RIFLE: WINCHESTER MODEL 1894**

**BARREL: 20", 1 in 8" TWIST**

**CASE: REMINGTON**

**PRIMER: WINCHESTER 120**

By modern standards the 25-35 Winchester, a rimmed bottlenecked cartridge first introduced in 1895, is only marginally useful on deer, appropriate for smaller game only at moderate ranges, and quite unspectacular on varmints. These same judgments have all been rendered on the 30-30 Winchester, another small bore smokeless powder cartridge also introduced in 1895 and also chambered in Winchester's famous Model 94 lever action. Time has not treated the venerable 30-30 quite as rudely as it has the 25-35, a cartridge now for all practical purposes obsolete.

Two 25 caliber Hornady Bullets are appropriate for reloading the 25-35: our 60 grain Soft Point, a thin jacketed varmint bullet; and our 117 grain Round Nose, a very deadly game bullet which will not only buck the brush well but will expand easily even at low remaining velocities.

The loads given here may also be used in the 25 Remington, a rimless version of the 25-35 developed for use in Remington's Model 8 autoloader and its Model 14 slide action. Many European combination guns were chambered for the 25-35 under the designation 6.5 x 52 R, and these same loads may be used with cartridges so designated. Always, however, start low and work up to maximum loads carefully.

# 25 CALIBER (.257" Dia.) 60 GRAIN SOFT POINT #2510

CARTRIDGE OVERALL LENGTH 2.305"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H 4198	21.3 gr.	22.1 gr.	23.0 gr.	23.8 gr.		
IMR 3031	25.1 gr.	25.9 gr.	26.7 gr.	27.5 gr.	28.2 gr.	
BL-C2	25.9 gr.	26.9 gr.	27.9 gr.	28.9 gr.	29.9 gr.	
IMR 4064	26.6 gr.	27.6 gr.	28.7 gr.	29.7 gr.	30.8 gr.	
H4895	27.1 gr.	27.9 gr.	28.7 gr.	29.5 gr.	30.3 gr.	31.1 gr.
IMR 4320	27.1 gr.	28.1 gr.	29.2 gr.	30.2 gr.	31.3 gr.	32.3 gr.

# 25 CALIBER (.257" Dia.) 117 GRAIN ROUND NOSE #2550

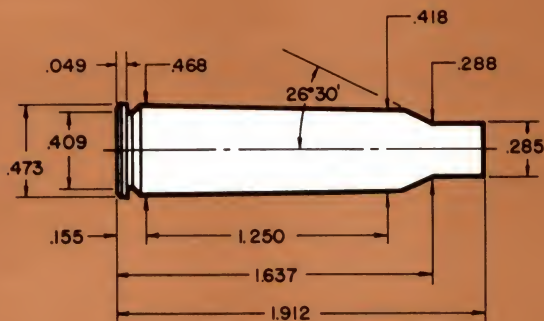
CARTRIDGE OVERALL LENGTH 2.600"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
H4198	17.7 gr.	18.9 gr.	20.0 gr.	21.2 gr.		
IMR 3031	20.0 gr.	21.1 gr.	22.3 gr.	23.4 gr.	24.6 gr.	25.7 gr.
IMR 4064	21.4 gr.	22.5 gr.	23.6 gr.	24.7 gr.	25.8 gr.	
H4895	22.0 gr.	23.1 gr.	24.4 gr.	25.6 gr.	26.8 gr.	
IMR 4320	22.6 gr.	23.7 gr.	24.8 gr.	25.9 gr.	27.0 gr.	28.1 gr.

Indicates maximum load • use with caution





## 250-3000 SAVAGE

**RIFLE: SAVAGE MODEL 99**

**BARREL: 24", 1 in 14" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

Cartridges were once named by caliber, powder charge, and bullet weight, a system of nomenclature which not only made good sense, but conveyed a lot of information. Thus the designation 45-70-500 represented a 45 caliber cartridge loaded with 70 grains of blackpowder and 500 grain bullet.

The "3000" in the 250 Savage's name has to do with neither powder nor bullet weights, but rather with the velocity original factory cartridges could develop when loaded with 87 grain bullets. Three thousand fps muzzle velocity, like the four minute mile, doesn't seem very fast to us today, but in 1915 when the 250-3000 was introduced it was a noteworthy accomplishment.

Developed by Charles Newton, the 250 Savage was chambered for 48 years after its introduction in the popular Model 99 Savage. During its extended career the 250 Savage has proved an effective varmint and medium game cartridge in both lever and bolt action rifles. Though it managed to remain popular after the introduction of the more powerful 257 Roberts in 1934, it could not withstand competition from the new 6mm's introduced in the mid-1950's and is now chambered only by Savage.

4320 powder is an excellent choice for reloading the 250 Savage with all 25 caliber Hornadys up to our 117 grain Round Nose. The 1 in 14" twist of the 250-3000, however, will not stabilize our newest 25, the 120 grain HP.



## 25 CALIBER (.257" Dia.)

### 60 GRAIN SOFT POINT #2510

CARTRIDGE OVERALL LENGTH 2.185"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	28.6 gr.	29.5 gr.	30.4 gr.	31.2 gr.	32.1 gr.	
IMR 3031	32.3 gr.	33.2 gr.	34.1 gr.	35.0 gr.	36.0 gr.	
H4895	34.8 gr.	35.8 gr.	36.8 gr.	37.7 gr.	38.7 gr.	
IMR 4064	35.0 gr.	35.9 gr.	36.9 gr.	37.9 gr.	38.8 gr.	
BL-C2	34.9 gr.	35.9 gr.	37.0 gr.	38.0 gr.	39.1 gr.	
IMR 4320	36.5 gr.	37.4 gr.	38.3 gr.	39.2 gr.	40.1 gr.	41.0 gr.
H380	37.1 gr.	38.4 gr.	39.6 gr.	40.8 gr.	42.1 gr.	

## 25 CALIBER (.257" Dia.)

### 75 GRAIN HOLLOW POINT #2520

CARTRIDGE OVERALL LENGTH 2.395"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H4198	26.3 gr.	27.4 gr.	28.4 gr.	29.5 gr.	30.6 gr.
IMR 3031	29.0 gr.	30.2 gr.	31.4 gr.	32.6 gr.	33.7 gr.
N201	30.7 gr.	32.1 gr.	33.5 gr.	34.8 gr.	36.2 gr.
BL-C2	31.0 gr.	32.3 gr.	33.7 gr.	35.1 gr.	
H4895	31.4 gr.	32.7 gr.	33.9 gr.	35.2 gr.	36.4 gr.
IMR 4064	31.6 gr.	32.8 gr.	34.1 gr.		
IMR 4320	32.0 gr.	33.4 gr.	34.8 gr.	36.2 gr.	37.6 gr.
H380	33.9 gr.	35.2 gr.	36.5 gr.	37.8 gr.	39.1 gr.
IMR 4350	37.7 gr.	38.7 gr.	39.8 gr.	40.9 gr.	42.0 gr.

Indicates maximum load • use with caution

**25 CALIBER (.257" Dia.)**  
**87 GRAIN SPIRE POINT #2530**

CARTRIDGE OVERALL LENGTH 2.435"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	28.5 gr.	29.6 gr.	30.7 gr.	31.7 gr.	32.8 gr.	
BL-C2	28.9 gr.	30.3 gr.	31.7 gr.	33.1 gr.	34.5 gr.	
IMR 4064	29.6 gr.	30.8 gr.	32.0 gr.	33.3 gr.	34.5 gr.	
N201	29.8 gr.	31.1 gr.	32.3 gr.	33.5 gr.	34.7 gr.	
H4895	29.8 gr.	31.0 gr.	32.3 gr.	33.5 gr.	34.8 gr.	
IMR 4320	30.7 gr.	32.0 gr.	33.3 gr.	34.5 gr.	35.8 gr.	37.1 gr.
H380	31.9 gr.	33.2 gr.	34.5 gr.	35.8 gr.	37.0 gr.	
IMR 4350	36.0 gr.	37.0 gr.	38.0 gr.	39.0 gr.	40.0 gr.	
WIN 760	35.7 gr.	36.9 gr.	38.0 gr.	39.2 gr.	40.3 gr.	
H4831	38.0 gr.	39.2 gr.	40.3 gr.	41.5 gr.	42.6 gr.	

**25 CALIBER (.257" Dia.)**  
**100 GRAIN SPIRE POINT #2540**

CARTRIDGE OVERALL LENGTH 2.510"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	27.1 gr.	28.3 gr.	29.5 gr.	30.7 gr.	31.9 gr.	
IMR 4064	27.8 gr.	29.1 gr.	30.4 gr.	31.6 gr.	32.9 gr.	
H4895	28.3 gr.	29.6 gr.	30.9 gr.	32.3 gr.	33.6 gr.	
IMR 4320	28.7 gr.	30.1 gr.	31.4 gr.	32.8 gr.	34.1 gr.	35.5 gr.
WIN 748	29.9 gr.	31.3 gr.	32.6 gr.	34.0 gr.	35.3 gr.	36.7 gr.
H380	30.3 gr.	31.7 gr.	33.1 gr.	34.5 gr.	35.9 gr.	
IMR 4350	32.8 gr.	34.1 gr.	35.3 gr.	36.6 gr.	37.9 gr.	
WIN 760	33.0 gr.	34.4 gr.	35.8 gr.	37.2 gr.	38.5 gr.	39.9 gr.
N204	34.3 gr.	35.7 gr.	37.0 gr.	38.3 gr.	39.7 gr.	
H4831	35.3 gr.	36.5 gr.	37.7 gr.	39.0 gr.	40.2 gr.	

*Indicates maximum load • use with caution*

**25 CALIBER (.257" Dia.)**

**117 GRAIN ROUND NOSE #2550**

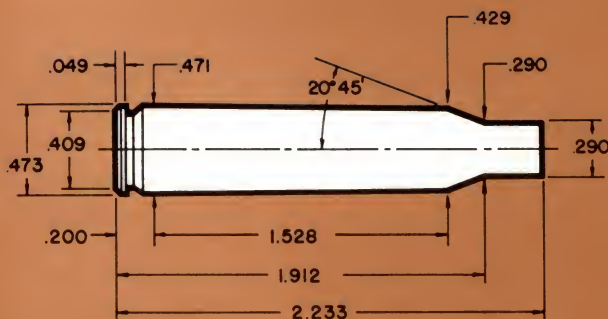


CARTRIDGE OVERALL LENGTH 2.515"

250-3000 SAVAGE

VELOCITY						
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	26.0 gr.	27.5 gr.	28.9 gr.	30.4 gr.	31.9 gr.	
IMR 4064	27.6 gr.	28.9 gr.	30.2 gr.	31.5 gr.	32.8 gr.	
H4895	27.9 gr.	29.2 gr.	30.5 gr.	31.8 gr.	33.1 gr.	
BL-C2	27.8 gr.	29.3 gr.	30.9 gr.	32.4 gr.	33.9 gr.	
IMR 4320	29.0 gr.	30.3 gr.	31.7 gr.	33.1 gr.	34.4 gr.	
H380	29.8 gr.	31.3 gr.	32.8 gr.	34.3 gr.		
IMR 4350	33.2 gr.	34.3 gr.	35.4 gr.	36.5 gr.		
WIN 760	32.9 gr.	34.5 gr.	36.0 gr.	37.6 gr.	39.1 gr.	
N204	34.1 gr.	35.4 gr.	36.7 gr.	38.0 gr.	39.4 gr.	
H4831	35.1 gr.	36.3 gr.	37.5 gr.	38.7 gr.	39.9 gr.	41.1 gr.

 Indicates maximum load • use with caution



## 257 ROBERTS

**RIFLE: REMINGTON MODEL 722**

**BARREL: 24", 1 in 10" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

For about four decades the 257 Roberts has been performing accurately and effectively as a hunting cartridge suitable for everything from varmints to medium sized game.

It began its career as a wildcat development of Ned H. Roberts, a well known writer and experimenter who originally dubbed his new cartridge the 25 Roberts. Remington first introduced it as a commercial round in 1934 and gave it its present form. Though Remington's factory version differed in minor respects from Ned Roberts' design, both are essentially the 7mm x 57mm Mauser case necked down to 25 caliber.

The appeal of the 257 Roberts arose from its versatility. Not only would it destroy chucks and coyotes at extended ranges, it still had the power and flat trajectory to be a dependable whitetail or antelope cartridge. The dual-purpose (varmint/game) concept was re-employed in the mid-1950's when both Remington and Winchester introduced 6mm cartridges, and these later developments have diminished the popularity of the 257 Roberts. Many of its fans argue, however, that had light weight sporting rifles been built for the 257, it could easily have held its own against the 6mm's.



**25 CALIBER (.257" Dia.)****60 GRAIN SOFT POINT #2510**

CARTRIDGE OVERALL LENGTH 2.535"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
H4198	34.0 gr.	35.2 gr.	36.4 gr.		
IMR 3031	39.5 gr.	40.3 gr.	41.2 gr.	42.1 gr.	
IMR 4064	40.4 gr.	41.3 gr.	42.3 gr.	43.2 gr.	44.2 gr.
H4895	42.2 gr.	43.2 gr.	44.2 gr.	45.2 gr.	46.2 gr.
H380		43.0 gr.	44.9 gr.	46.9 gr.	
IMR 4320	44.5 gr.	45.5 gr.	46.4 gr.		
IMR 4350	48.4 gr.	49.4 gr.	50.5 gr.	51.5 gr.	

257 ROBERTS

**25 CALIBER (.257" Dia.)****75 GRAIN HOLLOW POINT #2520**

CARTRIDGE OVERALL LENGTH 2.795"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4198	34.3 gr.	35.6 gr.	36.9 gr.		
IMR 3031	38.8 gr.	39.9 gr.	40.9 gr.	41.9 gr.	
H4895	40.3 gr.	41.3 gr.	42.2 gr.	43.2 gr.	44.2 gr.
IMR 4064	40.4 gr.	41.4 gr.	42.4 gr.	43.3 gr.	
H380	41.7 gr.	43.1 gr.	44.4 gr.	45.8 gr.	
IMR 4320	42.8 gr.	43.8 gr.	44.8 gr.	45.8 gr.	
WIN 760	44.5 gr.	45.6 gr.	46.8 gr.		
N204	45.6 gr.	46.8 gr.	48.0 gr.	49.2 gr.	
IMR 4350	46.8 gr.	47.9 gr.	49.0 gr.	50.1 gr.	
H4831	48.5 gr.	50.3 gr.	52.1 gr.		

Indicates maximum load • use with caution

**25 CALIBER (.257" Dia.)**  
**87 GRAIN SPIRE POINT #2530**

CARTRIDGE OVERALL LENGTH 2.850"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	37.3 gr.	38.4 gr.	39.5 gr.	40.6 gr.	
H4895	39.5 gr.	40.6 gr.	41.7 gr.	42.8 gr.	43.8 gr.
IMR 4064	40.1 gr.	41.1 gr.	42.1 gr.	43.1 gr.	
IMR 4320	40.3 gr.	41.3 gr.	42.3 gr.	43.3 gr.	44.3 gr.
WIN 760	40.0 gr.	41.5 gr.	43.0 gr.	44.5 gr.	
H380		41.0 gr.	43.2 gr.	45.4 gr.	
N204	41.3 gr.	42.9 gr.	44.4 gr.	46.0 gr.	

**25 CALIBER (.257 Dia.)**  
**100 GRAIN SPIRE POINT #2540**

CARTRIDGE OVERALL LENGTH 2.845"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	34.7 gr.	36.0 gr.	37.2 gr.	38.5 gr.	39.8 gr.
H4895	36.0 gr.	37.2 gr.	38.4 gr.	39.6 gr.	40.8 gr.
IMR 4064	36.5 gr.	37.8 gr.	39.0 gr.	40.2 gr.	41.4 gr.
IMR 4320	37.6 gr.	38.8 gr.	40.0 gr.	41.1 gr.	42.3 gr.
WIN 760		38.6 gr.	40.0 gr.	41.3 gr.	
H380		40.0 gr.	41.2 gr.	42.5 gr.	
N204	37.6 gr.	39.3 gr.	41.0 gr.	42.7 gr.	44.4 gr.
IMR 4350		42.6 gr.	43.8 gr.	45.0 gr.	46.2 gr.
H4831		44.5 gr.	45.8 gr.	47.1 gr.	48.4 gr.

 Indicates maximum load • use with caution

## 25 CALIBER (.257" Dia.)

## 117 GRAIN ROUND NOSE #2550

CARTRIDGE OVERALL LENGTH 2.835"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	29.6 gr.	31.2 gr.	32.9 gr.	34.6 gr.	
IMR 4064	30.0 gr.	31.8 gr.	33.5 gr.	35.2 gr.	
H4895	30.9 gr.	32.5 gr.	34.2 gr.	35.8 gr.	37.4 gr.
IMR 4320	31.5 gr.	33.2 gr.	34.9 gr.	36.5 gr.	
H380	32.6 gr.	34.3 gr.	36.1 gr.	37.8 gr.	
IMR 4350	33.6 gr.	35.4 gr.	37.1 gr.	38.9 gr.	40.6 gr.
WIN 760	34.5 gr.	36.5 gr.	38.4 gr.	40.4 gr.	
N204	35.3 gr.	37.1 gr.	39.0 gr.	40.8 gr.	
H4831	38.5 gr.	40.0 gr.	41.6 gr.	43.1 gr.	44.6 gr.

## 25 CALIBER (.257" Dia.)

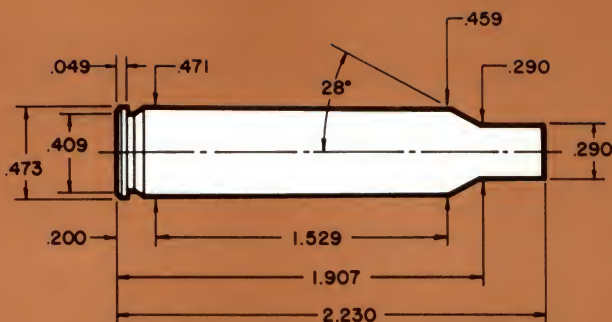
## 120 GRAIN HOLLOW POINT #2560

CARTRIDGE OVERALL LENGTH 2.990"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	30.5 gr.	32.2 gr.	33.9 gr.	35.5 gr.	
IMR 4064	31.5 gr.	33.4 gr.	35.2 gr.	37.0 gr.	
H4895	32.0 gr.	33.8 gr.	35.5 gr.	37.3 gr.	
IMR 4320	33.3 gr.	35.0 gr.	36.7 gr.	38.3 gr.	
H380	34.2 gr.	35.8 gr.	37.4 gr.	39.0 gr.	
IMR 4350	36.4 gr.	37.8 gr.	39.2 gr.	40.6 gr.	42.0 gr.
WIN 760		37.2 gr.	39.2 gr.	41.2 gr.	
N204	35.9 gr.	37.8 gr.	39.6 gr.	41.4 gr.	
H4831	39.7 gr.	41.3 gr.	42.8 gr.	44.3 gr.	

 Indicates maximum load • use with caution



## 257 ROBERTS IMPROVED

**RIFLE: WINCHESTER MODEL 70**

**BARREL: 24", 1 in 10" TWIST**

**CASE: REMINGTON**

**PRIMER: RWS**

The process of "improving" a standard factory cartridge is a simple one; case capacity is enlarged by increasing the shoulder angle and (usually) by reducing the body taper. When fired in an improved chamber, factory ammunition fireforms to the new case dimensions, though at a slight loss in velocity. With greater powder capacity, the improved case generally — though not always — has a higher velocity potential.

P. O. Ackley, master gunsmith, experimenter, and arms authority, has sparked considerable interest in improved cartridges. The 257 Improved is an excellent performer, adding up to 200 fps velocity over its factory cousin. Not the least of its advantages, according to Ackley, is the fact that standard 257 Roberts factory ammunition can be used in an improved rifle should the need arise. Most other 25 caliber wildcats do not enjoy this flexibility.

The 257 Improved is all that the 257 Roberts is — and a bit more. (Our version, incidentally, is the RCBS design rather than Ackley's and features a 28° shoulder rather than his 40°.) A comparison of the loading data for both cartridges will show our very satisfactory experience with it. Suitable for a wide variety of North American game, the 257 Improved is also an excellent varmint cartridge which thrives on 75 and 87 grain Hornadys.



## 25 CALIBER (.257" Dia.)

### 60 GRAIN SOFT POINT #2510

CARTRIDGE OVERALL LENGTH 2.530"



POWDER	VELOCITY					
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps	3800 fps
H4198	33.5 gr.	34.8 gr.	36.1 gr.	37.5 gr.		
IMR 3031	38.3 gr.	39.5 gr.	40.7 gr.	41.8 gr.	43.0 gr.	44.2 gr.
H4895	40.6 gr.	41.9 gr.	43.3 gr.	44.6 gr.	45.9 gr.	
IMR 4064	41.5 gr.	42.7 gr.	43.9 gr.	45.1 gr.	46.2 gr.	47.4 gr.
IMR 4320	41.9 gr.	43.2 gr.	44.4 gr.	45.6 gr.	46.9 gr.	48.1 gr.
H380	43.6 gr.	45.3 gr.	47.1 gr.	48.9 gr.	50.7 gr.	
IMR 4350	47.9 gr.	49.1 gr.	50.3 gr.	51.6 gr.		
WIN 760	47.7 gr.	49.2 gr.	50.7 gr.	52.2 gr.	53.6 gr.	55.1 gr.
N204	51.9 gr.	53.1 gr.	54.4 gr.	55.6 gr.	56.8 gr.	58.0 gr.

257 ROBERTS IMPROVED

## 25 CALIBER (.257" Dia.)

### 75 GRAIN HOLLOW POINT #2520

CARTRIDGE OVERALL LENGTH 2.790"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H4198	32.2 gr.	33.7 gr.	35.2 gr.	36.7 gr.	38.2 gr.	
IMR 3031	36.0 gr.	37.3 gr.	38.5 gr.	39.8 gr.	41.1 gr.	
H4895	38.0 gr.	39.3 gr.	40.7 gr.	42.0 gr.	43.3 gr.	44.6 gr.
IMR 4064	38.5 gr.	39.8 gr.	41.1 gr.	42.4 gr.	43.7 gr.	45.1 gr.
IMR 4320	39.5 gr.	40.8 gr.	42.1 gr.	43.3 gr.	44.6 gr.	45.8 gr.
H380		42.7 gr.	44.3 gr.	46.0 gr.	47.6 gr.	49.3 gr.
WIN 760	44.4 gr.	46.1 gr.	47.8 gr.	49.5 gr.	51.3 gr.	53.0 gr.

Indicates maximum load • use with caution

## 25 CALIBER (.257" Dia.) 87 GRAIN SPIRE POINT #2530

CARTRIDGE OVERALL LENGTH 2.845"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 3031	35.9 gr.	37.4 gr.	38.9 gr.	40.3 gr.	
H4895	37.6 gr.	39.1 gr.	40.5 gr.	41.9 gr.	43.4 gr.
IMR 4064	38.0 gr.	39.4 gr.	40.8 gr.	42.2 gr.	
IMR 4320	38.6 gr.	40.0 gr.	41.5 gr.	43.0 gr.	44.4 gr.
H380	40.9 gr.	42.5 gr.	44.1 gr.	45.7 gr.	
IMR 4350		45.0 gr.	46.4 gr.	47.8 gr.	49.2 gr.
WIN 760		45.4 gr.	47.3 gr.	49.2 gr.	51.1 gr.
N204	47.3 gr.	48.7 gr.	50.0 gr.	51.4 gr.	52.8 gr.
H4831	47.7 gr.	49.3 gr.	51.0 gr.	52.6 gr.	

## 25 CALIBER (.257" Dia.) 100 GRAIN SPIRE POINT #2540

CARTRIDGE OVERALL LENGTH 2.840"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	33.4 gr.	35.0 gr.	36.6 gr.	38.2 gr.		
H4895	34.7 gr.	36.2 gr.	37.7 gr.	39.2 gr.	40.7 gr.	
IMR 4064	35.2 gr.	36.7 gr.	38.2 gr.	39.7 gr.	41.1 gr.	
IMR 4320	35.7 gr.	37.3 gr.	38.8 gr.	40.4 gr.	41.9 gr.	
H380		39.3 gr.	41.0 gr.	42.7 gr.		
IMR 4350		40.7 gr.	42.3 gr.	43.8 gr.	45.3 gr.	
N204	43.2 gr.	44.7 gr.	46.1 gr.	47.6 gr.	49.0 gr.	50.5 gr.
WIN 760	43.0 gr.	44.6 gr.	46.2 gr.	47.8 gr.	49.5 gr.	51.1 gr.
H4831	43.8 gr.	45.4 gr.	46.9 gr.	48.5 gr.	50.0 gr.	

*Indicates maximum load • use with caution*

## 25 CALIBER (.257" Dia.)

### 117 GRAIN ROUND NOSE #2550



CARTRIDGE OVERALL LENGTH 2.830"

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	31.0 gr.	32.7 gr.	34.4 gr.	36.0 gr.	37.7 gr.	
H4895	32.1 gr.	33.8 gr.	35.4 gr.	37.0 gr.	38.6 gr.	
IMR 4064	32.4 gr.	34.0 gr.	35.7 gr.	37.4 gr.	39.1 gr.	
IMR 4320	32.8 gr.	34.6 gr.	36.3 gr.	38.1 gr.	39.9 gr.	
H380	35.1 gr.	36.7 gr.	38.3 gr.	39.9 gr.	41.5 gr.	
IMR 4350	36.4 gr.	37.9 gr.	39.5 gr.	41.1 gr.	42.7 gr.	44.3 gr.
WIN 760		39.1 gr.	41.0 gr.	42.8 gr.	44.7 gr.	46.6 gr.
N204	39.0 gr.	40.7 gr.	42.3 gr.	44.0 gr.	45.7 gr.	47.4 gr.
H4831	39.7 gr.	41.3 gr.	43.0 gr.	44.7 gr.	46.4 gr.	48.1 gr.

257 ROBERTS IMPROVED

## 25 CALIBER (.257" Dia.)

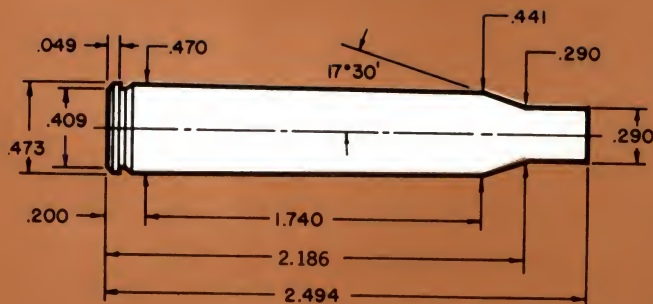
### 120 GRAIN HOLLOW POINT #2560



CARTRIDGE OVERALL LENGTH 2.990"

POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	32.1 gr.	33.6 gr.	35.2 gr.	36.8 gr.	38.3 gr.	
IMR 4064	33.3 gr.	34.9 gr.	36.5 gr.	38.0 gr.	39.6 gr.	
H4895	34.1 gr.	35.6 gr.	37.2 gr.	38.7 gr.	40.3 gr.	
IMR 4320	34.7 gr.	36.3 gr.	37.9 gr.	39.5 gr.	41.0 gr.	
H380	35.2 gr.	36.9 gr.	38.7 gr.	40.5 gr.	42.3 gr.	
N204		39.6 gr.	41.3 gr.	43.0 gr.	44.7 gr.	46.3 gr.
IMR 4350	36.4 gr.	38.2 gr.	39.9 gr.	41.7 gr.	43.5 gr.	45.3 gr.
WIN 760	37.5 gr.	39.3 gr.	41.0 gr.	42.8 gr.	44.5 gr.	46.2 gr.
H4831	40.7 gr.	42.7 gr.	44.8 gr.	46.9 gr.	49.0 gr.	

Indicates maximum load • use with caution



## 25-06 REMINGTON

**RIFLE:** REMINGTON 700

**BARREL:** 24", 1 in 10" TWIST

**CASE:** R-P

**PRIMER:** REMINGTON 9½, \*9½ MAGNUM

Necking the 30-06 up and down has resulted in some very fine sporting cartridges. The 25-06 is one of these. In 1969, forty-nine years after A. O. Niedner introduced this wildcat, Remington adopted the round and made it commercially available in their Model 700 bolt action rifles.

In essence, the 25-06 has kept the 25 caliber alive for the past decade. With the advent of the popular 6mm Remington and 243 Winchester, the 25's rapidly lost ground. Hornady introduced a 120 grain Hollow Point bullet with the 25-06 in mind. As a result, this bullet added appreciably to the ballistics of the 25-06 and created a fine big game stopper.

The 25-06 has ample power for making long shots at deer and antelope, with some hunters claiming that it is even adequate for elk. However, we feel its best use is on deer and antelope sized game. As a varmint round the 25-06 is outstanding. A properly scoped 25-06 with Hornady varmint bullets is easily capable of 300 to 400 yard varminting.

In our testing, the powders that performed the best with the 25-06 were Norma MRP, Winchester 785, and IMR 4831. These slower burning powders perform best when loaded in the region ranging between 90% of max and maximum.



## 25 CALIBER (.257" Dia.)

## 75 GRAIN HOLLOW POINT #2520



CARTRIDGE OVERALL LENGTH 2.985"

POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4064	44.2 gr.	45.8 gr.	47.4 gr.	49.0 gr.		
H4895	44.4 gr.	46.2 gr.	47.9 gr.	49.7 gr.		
IMR 4320	45.5 gr.	47.3 gr.	49.2 gr.			
H205	49.4 gr.	51.1 gr.	52.9 gr.	54.6 gr.		
IMR 4350	51.3 gr.	52.7 gr.	54.1 gr.			
N204	51.5 gr.	52.8 gr.	54.1 gr.	55.4 gr.	56.7 gr.	
IMR 4831	53.2 gr.	54.5 gr.	55.9 gr.	57.3 gr.	58.6 gr.	
WIN 785	54.4 gr.	55.9 gr.	57.4 gr.	58.9 gr.	60.4 gr.	
NORMA MRP	55.0 gr.	56.2 gr.	57.4 gr.	58.6 gr.	59.9 gr.	61.1 gr.

## 25 CALIBER (.257" Dia.)

## 87 GRAIN SPIRE POINT #2530



CARTRIDGE OVERALL LENGTH 3.120"

POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
H4895	40.2 gr.	41.7 gr.	43.2 gr.	44.7 gr.	46.2 gr.	
IMR 4064	40.3 gr.	41.9 gr.	43.4 gr.	45.0 gr.		
IMR 4320	41.6 gr.	43.1 gr.	44.6 gr.	46.1 gr.		
H205	45.9 gr.	47.6 gr.	49.2 gr.	50.9 gr.	52.5 gr.	
IMR 4350	47.4 gr.	49.0 gr.	50.6 gr.	52.1 gr.	53.7 gr.	
N204	48.5 gr.	50.1 gr.	51.8 gr.	53.4 gr.	55.1 gr.	
IMR 4831	50.9 gr.	52.3 gr.	53.6 gr.	54.9 gr.		
WIN 785	51.8 gr.	53.3 gr.	54.8 gr.	56.3 gr.	57.8 gr.	
NORMA MRP	52.5 gr.	54.0 gr.	55.5 gr.	57.0 gr.	58.5 gr.	60.0 gr.

Indicates maximum load • use with caution

# 25 CALIBER (.257" Dia.) 100 GRAIN SPIRE POINT #2540

CARTRIDGE OVERALL LENGTH 3.120"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4320	38.2 gr.	40.0 gr.	41.8 gr.	43.5 gr.		
IMR 4064	39.4 gr.	41.0 gr.	42.6 gr.	44.1 gr.		
H4895	39.8 gr.	41.4 gr.	42.9 gr.	44.5 gr.		
H205	42.4 gr.	44.3 gr.	46.1 gr.	47.9 gr.	49.7 gr.	51.5 gr.
IMR 4350	45.0 gr.	46.7 gr.	48.4 gr.	50.0 gr.	51.7 gr.	53.3 gr.
N204	45.1 gr.	46.6 gr.	48.0 gr.	49.5 gr.	51.0 gr.	
IMR 4831	47.0 gr.	48.7 gr.	50.3 gr.	51.9 gr.	53.6 gr.	
WIN 785		50.0 gr.	51.6 gr.	53.2 gr.	54.8 gr.	
NORMA MRP	49.1 gr.	50.7 gr.	52.4 gr.	54.0 gr.	55.7 gr.	57.3 gr.

# 25 CALIBER (.257" Dia.) 117 GRAIN ROUND NOSE #2550

CARTRIDGE OVERALL LENGTH 3.050"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	38.0 gr.	39.9 gr.	41.7 gr.	43.6 gr.	45.5 gr.
H4895	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.	
IMR 4320	39.4 gr.	41.3 gr.	43.2 gr.	45.0 gr.	
H205	39.9 gr.	41.9 gr.	43.9 gr.	45.9 gr.	
N204	42.7 gr.	44.4 gr.	46.0 gr.	47.7 gr.	
IMR 4350	43.0 gr.	45.1 gr.	46.9 gr.	48.6 gr.	50.5 gr.
IMR 4831	43.8 gr.	45.4 gr.	47.0 gr.	48.7 gr.	50.3 gr.
WIN 785	44.8 gr.	46.8 gr.	48.8 gr.	50.8 gr.	52.8 gr.
NORMA MRP	45.7 gr.	47.5 gr.	49.2 gr.	51.0 gr.	52.7 gr.

Indicates maximum load • use with caution

## 25 CALIBER (.257" Dia.)

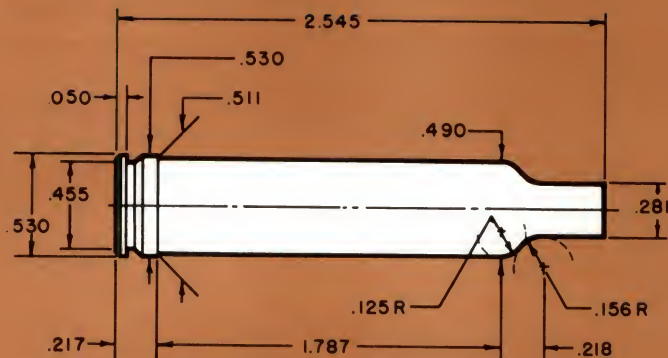
## 120 GRAIN HOLLOW POINT #2560

CARTRIDGE OVERALL LENGTH 3.240"



25-06 REMINGTON

POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	37.0 gr.	39.0 gr.	41.0 gr.	43.0 gr.	
H4895	37.6 gr.	39.4 gr.	41.3 gr.	43.2 gr.	
IMR 4320	38.3 gr.	40.3 gr.	42.2 gr.	44.2 gr.	
H205	39.9 gr.	41.9 gr.	43.9 gr.	45.9 gr.	
IMR 4350	41.2 gr.	43.0 gr.	44.7 gr.	46.5 gr.	48.2 gr.
N204	42.7 gr.	44.4 gr.	46.0 gr.	47.7 gr.	
IMR 4831	43.8 gr.	45.4 gr.	47.0 gr.	48.7 gr.	50.3 gr.
WIN 785	44.8 gr.	46.8 gr.	48.8 gr.	50.8 gr.	52.8 gr.
NORMA MRP	45.7 gr.	47.5 gr.	49.2 gr.	51.0 gr.	52.7 gr.



## 257 WEATHERBY MAGNUM

**RIFLE: WEATHERBY**

**BARREL: 26", 1 in 10" TWIST**

**CASE: WEATHERBY**

**PRIMER: FEDERAL 215**

In 1944 Roy Weatherby shortened a 300 H & H Magnum case, necked it down to 25 caliber, and gave the shoulder the characteristic Weatherby double radius, the 257 Weatherby Magnum was the result. The 257 Weatherby case has more powder capacity than the 25-06 and thus produces 100 to 200 fps more velocity.

This cartridge is a superb choice for hunting deer, antelope, sheep, and even goat. Many elk sized animals have been taken with this cartridge, but it is at its best on deer sized game. As a varmint, the 257 Weatherby is a good performer. With the 87 grain Spire Point traveling at 3700 fps and zeroed at 200 yards, the bullet only drops 4.6" at 300 yards.

The early 257 Weatherby Magnums had 1:12" twists and would not stabilize the 120 grain Hollow Point, but this problem no longer exists as all 257 Weatherby Magnums are now made with 1:10" twists.

The slower burning propellents are the best choices for large capacity small bore cartridges. All powders listed performed very well, with H205 showing the best accuracy.



## 25 CALIBER (.257" Dia.)

### 75 GRAIN HOLLOW POINT #2520

CARTRIDGE OVERALL LENGTH 3.140"



POWDER	VELOCITY				
	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4350	62.0 gr.	63.6 gr.	65.2 gr.	66.7 gr.	
H205	62.0 gr.	64.2 gr.	66.4 gr.	68.6 gr.	
IMR 4831	65.0 gr.	66.6 gr.	68.1 gr.	69.7 gr.	
NORMA MRP	67.7 gr.	69.5 gr.	71.2 gr.	72.9 gr.	74.6 gr.
WIN 785	67.9 gr.	69.7 gr.	71.5 gr.	73.2 gr.	75.0 gr.

## 25 CALIBER (.257" Dia.)

### 87 GRAIN SPIRE POINT #2530

CARTRIDGE OVERALL LENGTH 3.185"



POWDER	VELOCITY				
	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
WIN 760		59.9 gr.	61.8 gr.	63.6 gr.	65.4 gr.
IMR 4350	58.8 gr.	60.5 gr.	62.1 gr.	63.8 gr.	65.4 gr.
H205	58.4 gr.	60.6 gr.	62.9 gr.	65.1 gr.	67.4 gr.
IMR 4831	62.6 gr.	64.1 gr.	65.7 gr.	67.2 gr.	
WIN 785		65.3 gr.	67.4 gr.	69.4 gr.	71.5 gr.
NORMA MRP	64.6 gr.	66.3 gr.	68.1 gr.	69.9 gr.	71.6 gr.

## 25 CALIBER (.257" Dia.)

### 100 GRAIN SPIRE POINT #2540

CARTRIDGE OVERALL LENGTH 3.185"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
H205	55.1 gr.	57.3 gr.	59.6 gr.	61.8 gr.	64.1 gr.	
IMR 4350	55.8 gr.	57.8 gr.	59.8 gr.	61.8 gr.	63.7 gr.	65.7 gr.
IMR 4831	59.9 gr.	61.4 gr.	62.9 gr.	64.4 gr.		
NORMA MRP	60.5 gr.	62.6 gr.	64.7 gr.	66.7 gr.	68.8 gr.	
WIN 785	60.8 gr.	63.0 gr.	65.1 gr.	67.2 gr.	69.3 gr.	
H870	73.0 gr.	75.2 gr.	77.5 gr.	79.8 gr.		

Indicates maximum load • use with caution

**25 CALIBER (.257" Dia.)  
120 GRAIN HOLLOW POINT #2560**

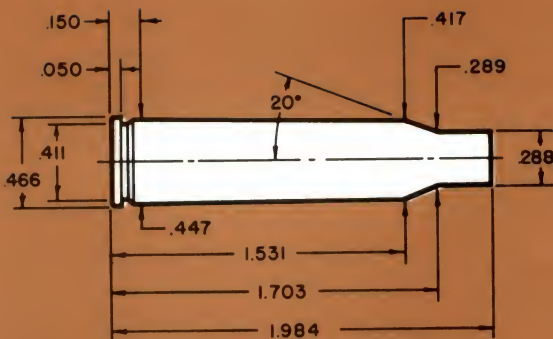
CARTRIDGE OVERALL LENGTH 3.300"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4350	50.6 gr.	52.7 gr.	54.8 gr.	56.9 gr.	59.0 gr.
H205	50.0 gr.	52.4 gr.	54.8 gr.	57.2 gr.	59.6 gr.
IMR 4831	54.5 gr.	56.6 gr.	58.6 gr.	60.7 gr.	62.7 gr.
NORMA MRP	55.2 gr.	57.3 gr.	59.3 gr.	61.3 gr.	63.4 gr.
WIN 785	55.3 gr.	57.8 gr.	60.2 gr.	62.6 gr.	65.0 gr.
H870		69.3 gr.	71.5 gr.	73.7 gr.	75.9 gr.



*Indicates maximum load • use with caution*



## 6.5mm JAPANESE

**RIFLE: ARISAKA TYPE 38**

**BARREL: 32", 1 in 9" TWIST**

**CASE: NORMA**

**PRIMER: FEDERAL 210**

The 6.5mm Japanese, or 6.5mm x 50mm Arisaka, was the Japanese service cartridge introduced in 1897 and brought out in 1905 in that nation's Type 38 rifle. No factory sporting rifle has ever been chambered for the cartridge.

First brought into America after WW II by returning GI's and subsequently imported in large numbers by surplus arms dealers, the 6.5mm Japanese has been readily adapted to sporting use. The Type 38 has a strong modified Mauser design action which permits loading the 6.5mm Japanese cartridge to its potential.

The military cartridge was loaded with a 139 grain bullet to a velocity of 2500 fps, approximately the same power as other 6.5mm's of the period. With the Hornady 6.5mm 140 grain Spire Point, four different powders can be used to reach 2600 fps (though the wise handloader should here, as always, approach maximum loads with caution). Boxer primed Norma cases are now available in this country, and with the wide assortment of Hornady 6.5mm bullets available for loading this cartridge, the 6.5mm Japanese should continue to see use on game up to deer and black bear size.

**6.5mm (.264" dia.)**

**100 GRAIN SPIRE POINT #2610**

**CARTRIDGE OVERALL LENGTH 2.770"**



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		30.4 gr.	31.6 gr.	32.8 gr.	34.0 gr.	
IMR 4064	31.3 gr.	32.5 gr.	33.6 gr.	34.8 gr.	35.9 gr.	37.1 gr.
H4895	31.5 gr.	32.7 gr.	33.8 gr.	35.0 gr.	36.1 gr.	37.3 gr.
IMR 4320	31.9 gr.	33.2 gr.	34.4 gr.	35.6 gr.	36.8 gr.	
H380	33.3 gr.	34.5 gr.	35.7 gr.	36.8 gr.	38.0 gr.	
IMR 4350	36.5 gr.	37.6 gr.	38.8 gr.	39.9 gr.	41.0 gr.	
H4831	38.7 gr.	39.8 gr.	40.8 gr.			

**6.5mm (.264" Dia.)**

**129 GRAIN SPIRE POINT #2620**

**CARTRIDGE OVERALL LENGTH 2.845"**



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	27.8 gr.	28.9 gr.	30.0 gr.	31.1 gr.	32.2 gr.	
IMR 4064		30.0 gr.	31.4 gr.	32.7 gr.	34.0 gr.	35.4 gr.
H4895		30.2 gr.	31.6 gr.	33.0 gr.	34.4 gr.	
IMR 4320		30.5 gr.	32.0 gr.	33.6 gr.	35.2 gr.	36.7 gr.
H380	30.6 gr.	31.9 gr.	33.3 gr.	34.6 gr.	35.9 gr.	
IMR 4350	33.8 gr.	35.0 gr.	36.2 gr.	37.3 gr.	38.5 gr.	39.6 gr.
H4831	36.0 gr.	37.3 gr.	38.5 gr.	39.8 gr.	41.0 gr.	

*Indicates maximum load • use with caution*



6.5mm (.264" Dia.)

140 GRAIN SPIRE POINT #2630

CARTRIDGE OVERALL LENGTH 2.800"



6.5mm JAPANESE

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	27.3 gr.	28.3 gr.	29.4 gr.	30.5 gr.	31.5 gr.	
IMR 4064	28.6 gr.	29.7 gr.	30.8 gr.	31.8 gr.	32.9 gr.	34.0 gr.
H4895	28.6 gr.	29.8 gr.	31.0 gr.	32.3 gr.	33.5 gr.	34.7 gr.
IMR 4320		29.4 gr.	31.0 gr.	32.7 gr.	34.3 gr.	
H380	29.6 gr.	31.1 gr.	32.5 gr.	34.0 gr.		
IMR 4350	32.1 gr.	33.6 gr.	35.0 gr.	36.4 gr.	37.8 gr.	39.2 gr.
H4831	34.2 gr.	35.5 gr.	36.8 gr.	38.1 gr.	39.4 gr.	40.7 gr.

\*These data may also be used with the 6.5 MM 140 gr. Round Nose, though overall length may vary.

6.5mm (.264" Dia.)

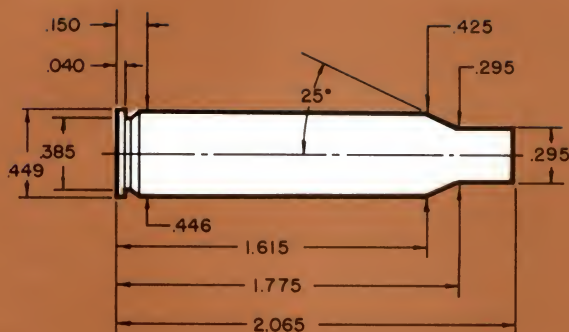
160 GRAIN ROUND NOSE #2640

CARTRIDGE OVERALL LENGTH 2.855"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	25.6 gr.	26.9 gr.	28.2 gr.	29.4 gr.	30.7 gr.	31.9 gr.
IMR 4064		27.5 gr.	29.0 gr.	30.6 gr.	32.1 gr.	33.6 gr.
H4895		28.0 gr.	29.5 gr.	31.0 gr.	32.5 gr.	34.0 gr.
IMR 4320				30.8 gr.	32.5 gr.	34.1 gr.
H380			30.4 gr.	32.0 gr.	33.7 gr.	
IMR 4350	29.7 gr.	31.2 gr.	32.7 gr.	34.2 gr.	35.7 gr.	37.2 gr.
H4831	32.2 gr.	33.5 gr.	34.8 gr.	36.1 gr.	37.3 gr.	38.6 gr.

Indicates maximum load • use with caution



## 6.5mm CARCANO

**RIFLE:** M1891 TS CARBINE (TERNI)

**BARREL:** 21", GAIN TWIST

**CASE:** NORMA

**PRIMER:** FEDERAL 210

The post-WW II importations of surplus Italian Model 91 rifles chambered for the 6.5mm Carcano cartridge (or 6.5mm x 52mm Mannlicher-Carcano), and their subsequent sale to American shooters at justifiably low prices has given wide distribution to this firearm.

In retrospect, the prices may not have been low enough. The action of the 6.5mm Carcano is sloppy and lacks the extra margin of safety of the best military actions; the finish of the rifle is crude. Scope mounting is difficult and essentially not worth the effort.

Surplus stocks of the 6.5mm Carcano appear depleted, and we suspect the use of this cartridge will decline. For those shooters fortunate enough to have acquired a 6.5mm Carcano that is reasonably accurate and thus worth reloading, Norma supplies good cartridge cases. The reloading tables which follow are the most extensive available on the cartridge.

The 6.5mm Italian cartridge is very similar in design and performance to the 6.5mm x 54mm Mannlicher-Schoenauer.

6.5mm (.264" Dia.)

100 GRAIN SPIRE POINT #2610

CARTRIDGE OVERALL LENGTH 2.835"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	27.8 gr.	28.9 gr.	29.9 gr.	31.0 gr.	32.0 gr.
BL-C2	29.2 gr.	30.4 gr.	31.6 gr.	32.8 gr.	
IMR 4064	29.7 gr.	30.9 gr.	32.0 gr.	33.1 gr.	
H4895	29.5 gr.	30.8 gr.	32.2 gr.	33.6 gr.	
IMR 4320	30.0 gr.	31.3 gr.	32.7 gr.	34.0 gr.	35.4 gr.
H380	30.3 gr.	31.8 gr.	33.4 gr.	34.9 gr.	36.5 gr.
IMR 4350	36.0 gr.	37.4 gr.	38.8 gr.	40.2 gr.	41.6 gr.
H450	37.1 gr.	38.8 gr.	40.4 gr.	42.0 gr.	43.7 gr.
H4831	38.8 gr.	40.2 gr.	41.6 gr.	43.0 gr.	

6.5mm (.264" Dia.)

129 GRAIN SPIRE POINT #2620

CARTRIDGE OVERALL LENGTH 2.935"



POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
IMR 3031	25.5 gr.	26.9 gr.	28.3 gr.	29.7 gr.	
BL-C2	27.8 gr.	28.9 gr.	30.0 gr.	31.0 gr.	32.1 gr.
IMR 4064	27.5 gr.	28.8 gr.	30.2 gr.	31.5 gr.	32.9 gr.
H4895	27.2 gr.	28.8 gr.	30.3 gr.	31.9 gr.	33.5 gr.
H380	28.5 gr.	30.0 gr.	31.4 gr.		
IMR 4320	28.8 gr.	30.1 gr.	31.5 gr.	32.9 gr.	
IMR 4350	33.0 gr.	34.3 gr.	35.6 gr.		
H450	35.7 gr.	37.0 gr.	38.3 gr.	39.6 gr.	40.8 gr.
H4831	36.6 gr.	37.9 gr.	39.2 gr.	40.4 gr.	

 Indicates maximum load • use with caution

**6.5mm (.264 Dia.)**

**140 GRAIN SPIRE POINT #2630**

**CARTRIDGE OVERALL LENGTH 2.915"**



VELOCITY					
POWDER	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	24.9 gr.	26.2 gr.	27.5 gr.	28.8 gr.	
BL-C2	25.9 gr.	27.0 gr.	28.2 gr.	29.4 gr.	30.6 gr.
H4895		27.8 gr.	29.3 gr.	30.8 gr.	32.3 gr.
IMR 4064	26.7 gr.	28.2 gr.	29.7 gr.	31.2 gr.	32.7 gr.
IMR 4320		28.9 gr.	30.3 gr.	31.7 gr.	33.1 gr.
H380	27.5 gr.	29.1 gr.	30.7 gr.	32.2 gr.	33.8 gr.
IMR 4350		33.3 gr.	34.9 gr.	36.4 gr.	37.9 gr.
H450		35.1 gr.	36.8 gr.	38.5 gr.	
H4831	35.6 gr.	36.8 gr.	37.9 gr.	39.1 gr.	40.3 gr.

These data may also be used with the 6.5mm 140 gr. Round Nose, though overall length may vary.

**6.5mm (.264" Dia.)**

**160 GRAIN ROUND NOSE #2640**

**CARTRIDGE OVERALL LENGTH 2.935"**



VELOCITY					
POWDER	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	25.4 gr.	27.0 gr.	28.5 gr.	30.0 gr.	
BL-C2	26.4 gr.	27.7 gr.	29.0 gr.	30.3 gr.	
IMR 4064	27.3 gr.	28.8 gr.	30.3 gr.		
H4895	27.2 gr.	28.8 gr.	30.4 gr.	32.0 gr.	
IMR 4320	27.6 gr.	29.2 gr.	30.9 gr.	32.5 gr.	
H380	28.6 gr.	30.4 gr.	32.1 gr.	33.8 gr.	
IMR 4350		34.2 gr.	35.6 gr.	37.0 gr.	38.5 gr.
H450	34.5 gr.	36.0 gr.	37.6 gr.	39.1 gr.	
H4831	35.3 gr.	36.7 gr.	38.0 gr.	39.4 gr.	

*Indicates maximum load • use with caution*





**6.5mm (.264" Dia.)**

**100 GRAIN SPIRE POINT #2610**

CARTRIDGE OVERALL LENGTH 2.870"



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	27.0 gr.	28.6 gr.	30.1 gr.	31.6 gr.	33.2 gr.	
IMR 4064	29.5 gr.	31.1 gr.	32.6 gr.	34.2 gr.	35.8 gr.	
N201			32.5 gr.	34.2 gr.	35.9 gr.	
H4895	29.7 gr.	31.3 gr.	32.9 gr.	34.4 gr.	35.9 gr.	37.5 gr.
IMR 4320	30.5 gr.	31.9 gr.	33.3 gr.	34.7 gr.	36.1 gr.	37.5 gr.
H380	31.2 gr.	32.6 gr.	34.1 gr.	35.6 gr.	37.1 gr.	38.5 gr.
IMR 4350	36.3 gr.	37.7 gr.	39.0 gr.	40.4 gr.	41.7 gr.	
H4831	39.2 gr.	40.6 gr.	42.0 gr.	43.4 gr.	44.7 gr.	

**6.5mm (.264" Dia.)**

**129 GRAIN SPIRE POINT #2620**

CARTRIDGE OVERALL LENGTH 2.970"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	26.7 gr.	28.2 gr.	29.8 gr.	31.3 gr.	32.8 gr.	
H4895	28.2 gr.	29.8 gr.	31.3 gr.	32.9 gr.	34.4 gr.	
IMR 4064	28.4 gr.	30.0 gr.	31.6 gr.	33.2 gr.	34.8 gr.	
IMR 4320	28.5 gr.	30.2 gr.	31.8 gr.	33.4 gr.	35.1 gr.	
H380	30.2 gr.	31.7 gr.	33.3 gr.	34.8 gr.	36.4 gr.	
IMR 4350	33.8 gr.	35.2 gr.	36.7 gr.	38.2 gr.	39.6 gr.	41.1 gr.
H4831	37.0 gr.	38.4 gr.	39.7 gr.	41.0 gr.	42.4 gr.	43.7 gr.
N204	36.0 gr.	37.6 gr.	39.2 gr.	40.8 gr.	42.4 gr.	44.0 gr.

*Indicates maximum load • use with caution*

6.5mm (.264" Dia.)

140 GRAIN SPIRE POINT #2630

CARTRIDGE OVERALL LENGTH 2.950"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	27.5 gr.	29.1 gr.	30.6 gr.	32.2 gr.	33.8 gr.	
IMR 4064	29.5 gr.	30.9 gr.	32.3 gr.	33.7 gr.	35.1 gr.	
H4895	29.6 gr.	31.0 gr.	32.4 gr.	33.8 gr.		
IMR 4320	29.3 gr.	30.9 gr.	32.5 gr.	34.1 gr.	35.7 gr.	
H380	30.9 gr.	32.3 gr.	33.7 gr.	35.1 gr.		
IMR 4350	33.9 gr.	35.4 gr.	36.8 gr.	38.2 gr.	39.7 gr.	41.1 gr.
H4831	36.6 gr.	38.0 gr.	39.4 gr.	40.8 gr.	42.4 gr.	43.9 gr.
N204	36.5 gr.	37.9 gr.	39.4 gr.	40.9 gr.		

These data may also be used with the 6.5mm 140 gr. Round Nose, though overall length may vary.

6.5 x 54mm MANNLICHER-SCHOENAUER

6.5mm (.264" Dia.)

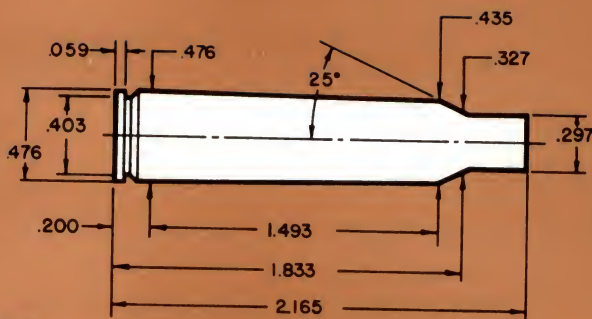
160 GRAIN ROUND NOSE #2640

CARTRIDGE OVERALL LENGTH 2.970"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 3031	25.3 gr.	26.8 gr.	28.4 gr.	30.0 gr.		
IMR 4064	26.9 gr.	28.5 gr.	30.0 gr.	31.5 gr.	33.0 gr.	
H4895	27.0 gr.	28.6 gr.	30.1 gr.	31.6 gr.		
IMR 4320	27.4 gr.	28.9 gr.	30.5 gr.	32.0 gr.	33.6 gr.	
H380	28.5 gr.	30.1 gr.	31.6 gr.	33.2 gr.		
IMR 4350	30.6 gr.	32.3 gr.	34.0 gr.	35.6 gr.	37.3 gr.	39.0 gr.
H4831	32.8 gr.	34.3 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.4 gr.
N204		34.3 gr.	36.3 gr.	38.2 gr.	40.1 gr.	42.0 gr.

Indicates maximum load • use with caution



## 6.5 x 55mm SWEDISH MAUSER

**RIFLE:** MAUSER MODEL 1896

**BARREL:** 18", 1 in 7½" Twist

**CASE:** NORMA

**PRIMER:** REMINGTON 9½

The 6.5 x 55 is an excellent and deservedly popular military surplus import. Adopted as the Swedish service cartridge in 1894 and chambered in three different Mauser rifle models, the cartridge is today widely popular in Sweden and Norway (where it was used in Krag-Jorgenson rifles) and it continues to gain boosters in this country.

The 6.5 x 55 differs from the rest of the Mauserwerke's smokeless powder military cartridges in not sharing the same basic case; its head diameter is .015" larger and its rim somewhat thicker.

Loaded with Hornady 129 grain and 140 grain bullets, the 6.5 x 55 is acceptable for all but the largest North American game. Reloaders are cautioned, however, against attempting really high intensity loads in either the Mauser or Krag actions, for these were not designed for pressures commonly developed in current factory rifles. The loads listed were safe in our test rifles, but maximum loads should be developed with care by each individual handloader. Start several grains below the top loads listed and work up a grain at a time, watching for signs of excessive pressure such as case head expansion. Prudence in reloading pays off.



6.5mm (.264" Dia.)

100 GRAIN SPIRE POINT #2610

CARTRIDGE OVERALL LENGTH 2.935"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	33.8 gr.	35.3 gr.	36.8 gr.	38.3 gr.	
H4895	35.8 gr.	37.5 gr.	39.2 gr.	40.9 gr.	
IMR 4064	36.5 gr.	38.0 gr.	39.5 gr.	41.0 gr.	
IMR 4320	36.7 gr.	38.4 gr.	40.1 gr.	41.8 gr.	
H380	38.3 gr.	40.2 gr.	42.1 gr.	44.0 gr.	
IMR 4350	43.1 gr.	44.7 gr.	46.3 gr.	47.9 gr.	49.5 gr.
H4831	45.7 gr.	47.2 gr.	48.7 gr.	50.1 gr.	51.6 gr.
H450	46.1 gr.	47.7 gr.	49.3 gr.	50.8 gr.	52.4 gr.

6.5 X 55mm SWEDISH MAUSER

6.5mm (.264" Dia.)

129 GRAIN SPIRE POINT #2620

CARTRIDGE OVERALL LENGTH 3.035"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	31.7 gr.	33.6 gr.	35.5 gr.	37.4 gr.	
IMR 4064	33.6 gr.	35.5 gr.	37.3 gr.	39.2 gr.	
IMR 4320	34.0 gr.	35.7 gr.	37.5 gr.	39.3 gr.	41.0 gr.
H4895	33.8 gr.	35.7 gr.	37.6 gr.	39.5 gr.	
H380		37.4 gr.	39.5 gr.	41.5 gr.	43.5 gr.
IMR 4350	39.4 gr.	41.0 gr.	42.7 gr.	44.4 gr.	46.0 gr.
H4831	42.0 gr.	43.5 gr.	45.0 gr.	46.6 gr.	48.1 gr.
H450		43.8 gr.	45.4 gr.	47.1 gr.	48.7 gr.
N204	42.6 gr.	44.1 gr.	45.6 gr.	47.2 gr.	48.7 gr.

Indicates maximum load • use with caution

## 6.5mm (.264" Dia.)

### 140 GRAIN SPIRE POINT #2630

CARTRIDGE OVERALL LENGTH 3.015"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	30.9 gr.	32.6 gr.	34.3 gr.	36.0 gr.	
H4895	32.3 gr.	34.1 gr.	35.9 gr.	37.7 gr.	
IMR 4320	32.5 gr.	34.3 gr.	36.1 gr.	37.9 gr.	39.7 gr.
IMR 4064	32.8 gr.	34.7 gr.	36.5 gr.	38.3 gr.	
H380		35.2 gr.	37.4 gr.	39.6 gr.	41.8 gr.
IMR 4350	36.8 gr.	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.
H4831	39.6 gr.	41.2 gr.	42.9 gr.	44.6 gr.	46.2 gr.
H450	40.3 gr.	41.9 gr.	43.5 gr.	45.1 gr.	46.7 gr.
N204	40.7 gr.	42.4 gr.	44.0 gr.	45.7 gr.	47.4 gr.

\*These data may also be used with the 6.5mm 140 gr. Round Nose, though overall length may vary.

## 6.5mm (.264" Dia.)

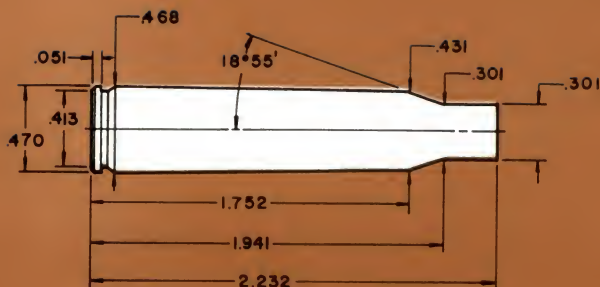
### 160 GRAIN ROUND NOSE #2640

CARTRIDGE OVERALL LENGTH 3.035"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	30.2 gr.	32.1 gr.	34.0 gr.		
IMR 4064	31.6 gr.	33.4 gr.	35.2 gr.		
H4895	31.9 gr.	33.8 gr.	35.6 gr.		
IMR 4320	32.0 gr.	33.9 gr.	35.8 gr.	37.6 gr.	
N204	34.1 gr.	36.1 gr.	38.0 gr.	40.0 gr.	42.0 gr.
IMR 4350	35.8 gr.	37.6 gr.	39.4 gr.	41.2 gr.	43.0 gr.
H4831	37.3 gr.	39.1 gr.	40.9 gr.	42.7 gr.	44.5 gr.
H450		41.6 gr.	43.4 gr.	45.2 gr.	47.0 gr.

*Indicates maximum load • use with caution*



## 6.5 x 57mm

**RIFLE: MAUSER 66**

**BARREL: 23 $\frac{5}{8}$ ", 1 in 8" TWIST**

**CASE: RWS**

**PRIMER: FEDERAL 210**

The 6.5 x 57mm is based on the 7 x 57mm Mauser case necked down, with a slightly different shoulder angle and nearly identical length. It originated somewhere around 1895 and is quite popular in Europe. The 6.5 x 57mm is of adequate size to easily handle deer sized game and can be used effectively on elk and black bear.

The 6.5mm bullets offered by Hornady are very deadly and dependable. Their extremely high ballistic coefficients make them most desirable for long range work. Hornady offers four different bullet weights for the 6.5mm: the 100 grain Spire Point for varminting, the 129 grain Spire Point, 140 grain Spire Point, 140 grain Round Nose, and the 160 grain Round Nose for big game.

Norma MRP and Winchester 785 gave the best results in our test rifle with 785 giving the best uniformity and accuracy throughout the range of bullets.

A rimmed version of this cartridge is used extensively in combination guns such as the Sauer, and maximum loads here should be dropped by 10 to 15%, since our data was obtained through the use of the much stronger Mauser Model 66 bolt action rifle.

6.5mm (.264" Dia.)  
100 GRAIN SPIRE #2610

CARTRIDGE OVERALL LENGTH 3.015"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	39.4 gr.	40.6 gr.	41.7 gr.	42.8 gr.	
IMR 4350	42.8 gr.	44.0 gr.	45.1 gr.	46.3 gr.	47.5 gr.
N204	45.0 gr.	46.2 gr.	47.4 gr.	48.6 gr.	49.8 gr.
IMR 4831	45.9 gr.	47.0 gr.	48.0 gr.	49.1 gr.	
WIN 785	47.5 gr.	48.9 gr.	50.3 gr.	51.7 gr.	53.1 gr.
NORMA MRP	48.2 gr.	49.6 gr.	51.0 gr.	52.3 gr.	53.7 gr.

6.5mm (.264" Dia.)  
129 GRAIN SPIRE POINT #2620

CARTRIDGE OVERALL LENGTH 3.005"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4064	36.0 gr.	37.4 gr.	38.9 gr.	40.4 gr.	
IMR 4350	39.3 gr.	40.6 gr.	41.9 gr.	43.2 gr.	44.5 gr.
N204	41.2 gr.	42.7 gr.	44.2 gr.	45.7 gr.	
IMR 4831	42.4 gr.	43.7 gr.	45.0 gr.	46.3 gr.	47.7 gr.
WIN 785	44.0 gr.	45.6 gr.	47.1 gr.	48.6 gr.	50.2 gr.
NORMA MRP	44.5 gr.	45.9 gr.	47.3 gr.	48.8 gr.	50.2 gr.



Indicates maximum load • use with caution

6.5 x 57mm



6.5mm (.264" Dia.)  
140 GRAIN ROUND NOSE #2635

CARTRIDGE OVERALL LENGTH 3.030"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	35.2 gr.	36.7 gr.	38.2 gr.	39.7 gr.	
IMR 4350	38.3 gr.	39.7 gr.	41.1 gr.	42.4 gr.	43.8 gr.
N204	40.5 gr.	41.8 gr.	43.2 gr.	44.4 gr.	45.7 gr.
IMR 4831	41.0 gr.	42.2 gr.	43.5 gr.	44.7 gr.	
WIN 785	42.9 gr.	44.5 gr.	46.1 gr.	47.7 gr.	49.2 gr.
NORMA MRP	43.6 gr.	45.0 gr.	46.4 gr.	47.8 gr.	49.2 gr.

These data may also be used with the 6.5mm. 140 gr. SP bullet, though overall length may vary.

6.5 X 57mm

6.5mm (.264" Dia.)  
160 GRAIN ROUND NOSE #2640

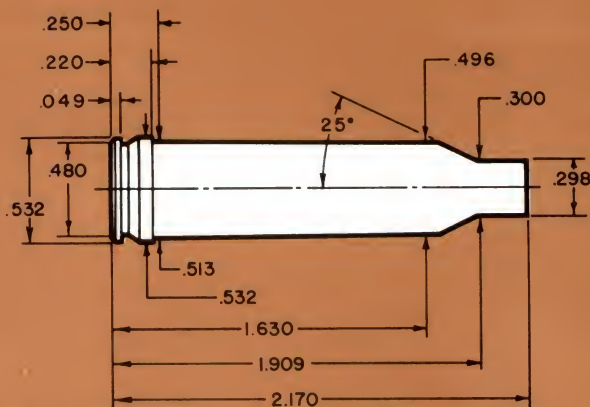
CARTRIDGE OVERALL LENGTH 3.075"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4064	32.9 gr.	34.6 gr.	36.4 gr.	38.1 gr.	
IMR 4350	36.0 gr.	37.5 gr.	39.0 gr.	40.5 gr.	41.9 gr.
N204	37.7 gr.	39.3 gr.	40.9 gr.	42.5 gr.	
IMR 4831	39.4 gr.	40.7 gr.	42.0 gr.	43.3 gr.	44.6 gr.
WIN 785	40.2 gr.	41.9 gr.	43.6 gr.	45.3 gr.	47.0 gr.
NORMA MRP	40.9 gr.	42.4 gr.	44.0 gr.	45.5 gr.	47.1 gr.



Indicates maximum load • use with caution



## 6.5mm REMINGTON MAGNUM

**RIFLE:** F.N. MAUSER CUSTOM

**BARREL:** 24", 1 in 9" TWIST

**CASE:** REMINGTON

**PRIMER:** ALCAN LARGE RIFLE

This belted cartridge, introduced in 1966 in Remington's Model 600 carbine, has considerably more powder capacity than the smaller European 6.5's. Developed by necking down the 350 Remington Magnum to 6.5mm, it is loaded by the factory with a 120 grain bullet and basically sold for game hunting, though reloaders can readily adapt it for varminting with 100 grain Hornady Spire Point loads (the 129 grain Spire Point is quite suitable for varmint shooting also, and is proving an excellent dual purpose bullet in the 6.5mm magnums).

The 18½" barrel of the Model 600 in which this cartridge was originally chambered did not fully exploit its performance potential. Remington now chambers its 6.5mm magnum only in the Model 700 BDL, a rifle whose 24" barrel will develop 25% more velocity than possible with the former carbine version. The initial appeal this cartridge enjoyed seems since to have waned.

Heavy bullets must be seated quite deeply in the short-necked 6.5mm Remington Magnum case, thereby reducing case capacity and velocity potential. Despite this, Remington's 6.5mm is adequate for all but the largest North American game when loaded from the wide selection of Hornady 6.5mm bullets.

6.5mm (.264" Dia.)

100 GRAIN SPIRE POINT #2610

CARTRIDGE OVERALL LENGTH 2.940"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	36.8 gr.	38.7 gr.	40.5 gr.	42.4 gr.	
IMR 4064	38.6 gr.	40.5 gr.	42.4 gr.	44.3 gr.	
H4895	39.1 gr.	41.0 gr.	42.9 gr.	44.7 gr.	
IMR 4320	39.9 gr.	41.9 gr.	43.8 gr.	45.7 gr.	47.6 gr.
H380	42.5 gr.	44.6 gr.	46.8 gr.	49.0 gr.	
IMR 4350	45.2 gr.	47.0 gr.	48.7 gr.	50.5 gr.	52.2 gr.
H4831	50.0 gr.	51.6 gr.	53.3 gr.	55.0 gr.	56.6 gr.
H450		52.2 gr.	53.9 gr.	55.7 gr.	57.4 gr.

6.5mm (.264" Dia.)

129 GRAIN SPIRE POINT #2620

CARTRIDGE OVERALL LENGTH 3.040"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	37.4 gr.	39.3 gr.	41.2 gr.	43.2 gr.	
IMR 4064	38.2 gr.	40.2 gr.	42.1 gr.	44.1 gr.	
H4895	38.4 gr.	40.4 gr.	42.4 gr.	44.4 gr.	46.4 gr.
IMR 4320	39.5 gr.	41.4 gr.	43.3 gr.	45.2 gr.	47.1 gr.
IMR 4350		43.6 gr.	45.7 gr.	47.7 gr.	49.8 gr.
H380	41.9 gr.	44.0 gr.	46.1 gr.	48.3 gr.	
H4831		48.3 gr.	50.3 gr.	52.3 gr.	54.2 gr.
H450		51.0 gr.	53.1 gr.	55.2 gr.	57.3 gr.

Indicates maximum load • use with caution

## 6.5mm (.264" Dia.)

### 140 GRAIN SPIRE POINT #2630

CARTRIDGE OVERALL LENGTH 3.020"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	37.5 gr.	39.7 gr.	41.9 gr.	44.1 gr.		
H4895	39.1 gr.	41.2 gr.	43.4 gr.	45.5 gr.	47.7 gr.	
IMR 4064	38.7 gr.	41.0 gr.	43.4 gr.	45.7 gr.	48.0 gr.	
IMR 4320	39.9 gr.	42.1 gr.	44.3 gr.	46.4 gr.		
IMR 4350			45.7 gr.	48.2 gr.	50.6 gr.	53.1 gr.
H380	41.6 gr.	44.0 gr.	46.3 gr.	48.6 gr.	50.9 gr.	
H4831		47.4 gr.	49.7 gr.	52.0 gr.	54.3 gr.	
H450	47.9 gr.	50.1 gr.	52.2 gr.	54.4 gr.	56.6 gr.	

\*These data may also be used with the 6.5mm 140 gr. Round Nose, though overall length may vary.

## 6.5mm (.264" Dia.)

### 160 GRAIN ROUND NOSE #2640

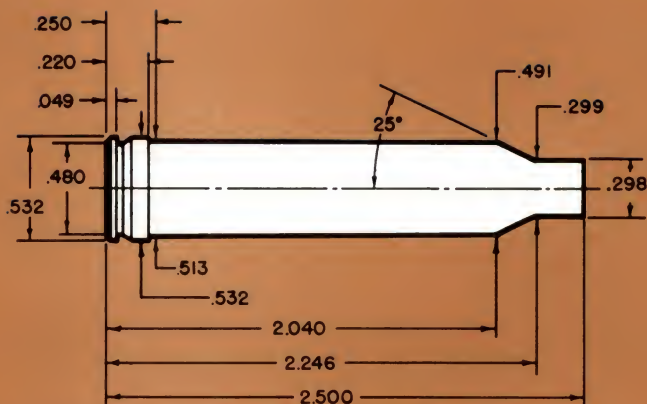
CARTRIDGE OVERALL LENGTH 3.040"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	36.0 gr.	38.3 gr.	40.4 gr.	42.6 gr.		
IMR 4064	36.9 gr.	39.2 gr.	41.6 gr.	43.9 gr.		
H4895	37.6 gr.	39.7 gr.	41.8 gr.	43.9 gr.	46.0 gr.	
IMR 4320	38.0 gr.	40.1 gr.	42.3 gr.	44.5 gr.	46.7 gr.	
H380	39.7 gr.	42.0 gr.	44.3 gr.	46.7 gr.		
IMR 4350	40.2 gr.	42.5 gr.	44.7 gr.	46.9 gr.	49.1 gr.	51.4 gr.
H4831	43.8 gr.	45.9 gr.	48.1 gr.	50.2 gr.	52.4 gr.	54.5 gr.
H450	45.9 gr.	48.1 gr.	50.2 gr.	52.4 gr.	54.5 gr.	

*Indicates maximum load • use with caution*





## 264 WINCHESTER MAGNUM

**RIFLE: WINCHESTER MODEL 70**

**BARREL: 24", 1 in 8" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

The hot, powerful 264 Winchester Magnum is one of a series of belted magnums the firm began with its 458 Winchester. Introduced in 1958 and billed then as the ultimate in high velocity, flat trajectory hunting cartridges, it has become fairly popular for plains and mountain hunting. In use on varmints, the 264 can turn in spectacular results when it drives a 100 grain bullet up to 3600 fps. Loaded with the long 160 grain Hornady Round Nose or 140 grain Hornadys in either Spire Point or Round Nose shape, the 264 Winchester Magnum has performed well on the largest North American game.

There are no free lunches, as the saying goes, and many 264 owners have quickly discovered that the price of ultra high velocity is reduced barrel life. As a matter of fact, we burned out several barrels in developing the loading tables which follow. The game hunter who shoots only a few dozen rounds a year with his 264 will have no special problems, but the avid varmint hunter may. Moderate loads used whenever possible will help prolong the 264's barrel life. One of the reasons that the 7mm Remington Magnum has so thoroughly eclipsed the popularity of the 264 may well be that the 7mm is somewhat easier on barrels.

**6.5mm (.264" Dia.)**  
**100 GRAIN SPIRE POINT #2610**

CARTRIDGE OVERALL LENGTH 3.230"



POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	49.9 gr.	52.1 gr.	54.3 gr.	56.5 gr.	
H4895	50.0 gr.	52.3 gr.	54.6 gr.	56.9 gr.	
IMR 4320		53.0 gr.	55.3 gr.	57.6 gr.	59.9 gr.
H380		54.8 gr.	56.8 gr.	58.7 gr.	
IMR 4350	54.8 gr.	57.3 gr.	59.8 gr.	62.3 gr.	
IMR 4831	59.1 gr.	61.1 gr.	63.2 gr.	65.3 gr.	
H450		61.6 gr.	64.6 gr.	67.5 gr.	70.4 gr.

**6.5mm (.264" Dia.)**  
**129 GRAIN SPIRE POINT #2620**

CARTRIDGE OVERALL LENGTH 3.290"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	49.8 gr.	52.3 gr.	54.8 gr.	57.3 gr.	
H4895	50.0 gr.	52.4 gr.	54.7 gr.	57.1 gr.	
IMR 4320	51.6 gr.	53.8 gr.	56.1 gr.	58.3 gr.	
IMR 4350	51.8 gr.	54.6 gr.	57.3 gr.		
H380	55.0 gr.	56.6 gr.	58.2 gr.	59.8 gr.	
IMR 4831	55.0 gr.	57.4 gr.	59.7 gr.	62.0 gr.	
H450			64.1 gr.	66.3 gr.	68.4 gr.



*Indicates maximum load • use with caution*

6.5mm (.264" Dia.)  
140 GRAIN SPIRE POINT #2630



CARTRIDGE OVERALL LENGTH 3.255"

VELOCITY					
POWDER	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	49.0 gr.	51.4 gr.	53.7 gr.		
H4895	49.5 gr.	51.8 gr.	54.2 gr.		
IMR 4320	49.8 gr.	52.3 gr.	54.8 gr.		
IMR 4350	51.1 gr.	53.6 gr.	56.1 gr.		
IMR 4831	53.1 gr.	55.7 gr.	58.4 gr.	61.1 gr.	
H450		58.9 gr.	61.7 gr.	64.4 gr.	67.2 gr.
WIN 785	56.5 gr.	59.1 gr.	61.7 gr.		
H870		73.2 gr.	75.7 gr.	78.3 gr.	

\*These data may also be used with the 6.5mm 140 gr. Round Nose, though overall length may vary.

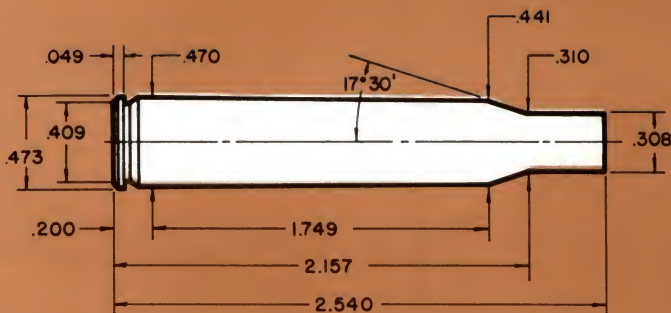
6.5mm (.264" Dia.)  
160 GRAIN ROUND NOSE #2640



CARTRIDGE OVERALL LENGTH 3.350"

VELOCITY					
POWDER	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	45.4 gr.	47.8 gr.	50.2 gr.		
IMR 4895	45.7 gr.	48.2 gr.	50.6 gr.	53.0 gr.	
IMR 4320	46.6 gr.	48.9 gr.	51.2 gr.	53.6 gr.	
IMR 4350	46.2 gr.	49.6 gr.	53.0 gr.		
IMR 4831	47.7 gr.	51.1 gr.	54.5 gr.		
NORMA MRP	49.6 gr.	52.7 gr.	55.9 gr.	59.0 gr.	
WIN 785	51.4 gr.	54.2 gr.	57.0 gr.	59.8 gr.	62.7 gr.
H450		58.3 gr.	60.0 gr.	61.8 gr.	63.5 gr.
H870		66.5 gr.	68.6 gr.	70.7 gr.	72.8 gr.

Indicates maximum load • use with caution



## 270 WINCHESTER

**RIFLE: WINCHESTER 70**

**BARREL: 24", 1 in 10" TWIST**

**CASE: FRONTIER**

**PRIMER: WINCHESTER 120**

This popular necked down 30-06 cartridge was introduced in 1925 by Winchester for their Model 54 bolt action. Its renown as a flat shooting big game stopper has kept the 270 alive and well for more than 50 years. Much of the popularity of the 270 can be credited to the late Jack O'Connor who wrote more articles on the 270 caliber than any other person. The 270 has long held a position as one of the most popular big game cartridges in North America. In recent years the 7mm's have gained a large following, but they have not slowed the sales of the venerable 270.

The flat shooting, high velocity 130 and 150 grain Spire Points along with our new 140 grain Boat Tail Spire Point make this cartridge effective on all North American game and many of the thin skinned animals of Africa. Our new InterLock design improves an already outstanding performer, the 270. The InterLock design coupled with the Inner Groove feature gives controlled expansion and prevents core slippage.

The 270 can double as a varmint round. Hornady makes a 100 grain Spire Point and a 110 grain Hollow Point for long range varminting.

The powders that showed the best uniformity and yielded the best accuracy were Winchester 785, H205, and IMR 4831. The 270 is an efficient cartridge, and for this reason most powders listed performed reasonably well.



## 270 CALIBER (.277" Dia.)

### 100 GRAIN SPIRE POINT #2710

CARTRIDGE OVERALL LENGTH 3.075"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	48.2 gr.	49.6 gr.	51.0 gr.	52.4 gr.	53.8 gr.
IMR 4320	48.0 gr.	49.7 gr.	51.5 gr.	53.2 gr.	54.9 gr.
IMR 4350	54.2 gr.	55.6 gr.	56.9 gr.	58.3 gr.	59.6 gr.
H205	55.7 gr.	57.2 gr.	58.7 gr.	60.2 gr.	61.7 gr.
IMR 4831	57.2 gr.	58.6 gr.	60.0 gr.		
H450	58.1 gr.	59.8 gr.	61.6 gr.	63.3 gr.	65.1 gr.
NORMA MRP	58.6 gr.	60.1 gr.	61.6 gr.	63.1 gr.	64.7 gr.
WIN 785	59.2 gr.	60.8 gr.	62.5 gr.	64.1 gr.	

## 270 CALIBER (.277" Dia.)

### 110 GRAIN HOLLOW POINT #2720

CARTRIDGE OVERALL LENGTH 3.305"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	47.2 gr.	48.7 gr.	50.1 gr.	51.6 gr.	
IMR 4320	46.2 gr.	48.3 gr.	50.4 gr.	52.4 gr.	
IMR 4350	53.0 gr.	54.4 gr.	55.7 gr.	57.1 gr.	58.4 gr.
H205	53.1 gr.	54.9 gr.	56.8 gr.	58.6 gr.	60.4 gr.
IMR 4831	55.8 gr.	57.3 gr.	58.8 gr.	60.3 gr.	
H450	56.6 gr.	58.4 gr.	60.2 gr.	62.0 gr.	
NORMA MRP	57.3 gr.	58.8 gr.	60.3 gr.	61.9 gr.	63.4 gr.
WIN 785	58.2 gr.	59.7 gr.	61.3 gr.	62.8 gr.	64.4 gr.

 Indicates maximum load • use with caution

270 CALIBER (.277" Dia.)  
130 GRAIN SPIRE POINT #2730



CARTRIDGE OVERALL LENGTH 3.275"

VELOCITY					
POWDER	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	45.1 gr.	46.7 gr.	48.3 gr.	49.8 gr.	
IMR 4320	46.2 gr.	47.8 gr.	49.5 gr.	51.1 gr.	
IMR 4350	50.6 gr.	52.0 gr.	53.4 gr.	54.8 gr.	
H205		53.4 gr.	55.0 gr.		
IMR 4831	53.0 gr.	54.4 gr.	55.8 gr.	57.1 gr.	
NORMA MRP	53.7 gr.	55.5 gr.	57.2 gr.	59.0 gr.	
H450	52.6 gr.	54.9 gr.	57.2 gr.	59.4 gr.	61.7 gr.
WIN 785	54.7 gr.	56.4 gr.	58.1 gr.	59.8 gr.	61.5 gr.

270 CALIBER (.277" Dia.)  
140 GRAIN BOAT TAIL  
SPIRE POINT #2735



CARTRIDGE OVERALL LENGTH 3.355"

VELOCITY					
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	41.8 gr.	43.9 gr.	45.9 gr.	47.9 gr.	
IMR 4350	48.9 gr.	50.3 gr.	51.7 gr.	53.2 gr.	
H205	49.6 gr.	51.3 gr.	53.0 gr.		
IMR 4831	51.1 gr.	52.6 gr.	54.1 gr.	55.7 gr.	
NORMA MRP	52.2 gr.	53.8 gr.	55.4 gr.	57.1 gr.	
H450	51.9 gr.	53.7 gr.	55.5 gr.	57.3 gr.	59.1 gr.
WIN 785		53.2 gr.	55.3 gr.	57.3 gr.	59.4 gr.



Indicates maximum load • use with caution

270 CALIBER (.277" Dia.)  
150 GRAIN SPIRE POINT #2740

CARTRIDGE OVERALL LENGTH 3.285"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	42.5 gr.	44.4 gr.	46.4 gr.		
IMR 4350	47.3 gr.	49.0 gr.	50.7 gr.	52.4 gr.	54.1 gr.
H205	47.4 gr.	49.4 gr.	51.4 gr.		
IMR 4831	49.8 gr.	51.3 gr.	52.9 gr.	54.5 gr.	
H450	50.2 gr.	52.3 gr.	54.5 gr.	56.6 gr.	
NORMA MRP	50.7 gr.	52.5 gr.	54.3 gr.	56.0 gr.	57.8 gr.
WIN 785	52.4 gr.	54.2 gr.	56.0 gr.	57.7 gr.	59.5 gr.

These data may also be used with the 270 cal. 150 gr. RN, though overall length may vary.

270 WINCHESTER



Indicates maximum load • use with caution



## 270 WEATHERBY MAGNUM

**RIFLE: WEATHERBY MARK V**  
**BARREL: 26", 1 in 12" TWIST**  
**CASE: WEATHERBY**  
**PRIMER: FEDERAL 215**

The 270 Weatherby Magnum is at home anywhere on the North American continent and with its high velocity and flat trajectory this round provides long range stopping power on thin skinned African plains animals.

This particular cartridge was actually the first case that Roy Weatherby derived from the necked down 300 H & H case; it incorporates the Weatherby double radius shoulder. The 270 Weatherby Magnum is commercially available only in the Mark V Weatherby and the Golden Eagle.

By using the explosive Hornady 100 grain Spire Points or 110 grain Hollow Points, the 270 Weatherby Magnum can be used very effectively on varmints, but it is at its best with the heavier bullets.

During our testing all powders gave acceptable results, but Winchester 785 provided the best accuracy and uniformity from shot to shot. Most large cartridges do not perform well with reduced loads and this cartridge is no exception. For best performance all loads should be kept near maximum. Be sure to work up to maximum loads with caution as any variations in components can alter pressures to dangerous levels.



## 270 CALIBER (.277" Dia.) 100 GRAIN SPIRE POINT #2710

CARTRIDGE OVERALL LENGTH 3.220"



VELOCITY					
POWDER	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064	55.6 gr.	57.1 gr.	58.5 gr.	60.0 gr.	
IMR 4350	63.1 gr.	64.7 gr.	66.4 gr.	68.0 gr.	69.6 gr.
N204	65.4 gr.	67.1 gr.	68.8 gr.		
IMR 4831	66.0 gr.	67.5 gr.	69.0 gr.	70.5 gr.	
WIN 785	68.5 gr.	70.1 gr.	71.7 gr.	73.3 gr.	74.9 gr.
NORMA MRP	68.8 gr.	70.5 gr.	72.2 gr.	73.9 gr.	

## 270 CALIBER (.277" Dia.) 110 GRAIN HOLLOW POINT #2720

CARTRIDGE OVERALL LENGTH 3.290"



VELOCITY					
POWDER	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4064	54.0 gr.	55.9 gr.	57.9 gr.	59.9 gr.	
IMR 4350	61.6 gr.	63.3 gr.	64.9 gr.	66.6 gr.	68.3 gr.
N204	63.4 gr.	65.3 gr.	67.2 gr.		
IMR 4831	64.3 gr.	65.6 gr.	67.0 gr.	68.3 gr.	
WIN 785	67.2 gr.	69.0 gr.	70.7 gr.	72.5 gr.	74.2 gr.
NORMA MRP	68.6 gr.	70.2 gr.	71.7 gr.	73.3 gr.	74.9 gr.

## 270 CALIBER (.277" Dia.) 130 GRAIN SPIRE POINT #2730

CARTRIDGE OVERALL LENGTH 3.280"



VELOCITY					
POWDER	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	51.8 gr.	53.8 gr.	55.8 gr.		
IMR 4350	58.2 gr.	60.2 gr.	62.1 gr.	64.1 gr.	66.0 gr.
N204	61.2 gr.	63.0 gr.	64.8 gr.		
IMR 4831	61.4 gr.	63.0 gr.	64.6 gr.	66.2 gr.	
WIN 785	64.0 gr.	65.8 gr.	67.5 gr.	69.3 gr.	
NORMA MRP	65.8 gr.	67.7 gr.	69.6 gr.	71.6 gr.	

*Indicates maximum load • use with caution*

270 CALIBER (.277" Dia.)  
150 GRAIN SPIRE POINT #2740



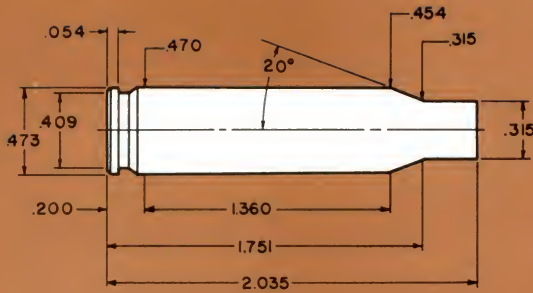
CARTRIDGE OVERALL LENGTH 3.280"

POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	46.2 gr.	48.1 gr.	50.0 gr.	51.9 gr.	
IMR 4350	52.4 gr.	54.8 gr.	57.1 gr.	59.5 gr.	61.8 gr.
N204	54.6 gr.	56.8 gr.	59.1 gr.	61.4 gr.	63.7 gr.
IMR 4831	55.6 gr.	57.8 gr.	59.9 gr.	62.0 gr.	
H450	57.3 gr.	59.5 gr.	61.7 gr.	63.9 gr.	66.1 gr.
WIN 785	58.6 gr.	60.3 gr.	62.1 gr.	63.9 gr.	65.6 gr.
NORMA MRP	58.8 gr.	60.9 gr.	63.0 gr.	65.1 gr.	67.1 gr.

These data may also be used with the 270 cal. 150 gr. RN, though overall length may vary.



*Indicates maximum load • use with caution*



## 7mm-08 REMINGTON

**RIFLE: REMINGTON MODEL 788**

**BARREL: 18½", 1:9¼ TWIST**

**CASE: REMINGTON**

**PRIMER: REMINGTON 9½**

The 7mm-08 was introduced by Remington in 1980 in their Model 788 and 700 BDL rifles. This cartridge case is based on the 308 case with a case length of 2.035" while retaining the same body and shoulder angle of its parent case.

The largest following for the 7mm-08 has come from the metallic silhouette shooters. This cartridge, when loaded with the flat shooting and highly accurate Hornady 162 gr. BTHP, is very effective on the distant silhouette targets. It also makes an ideal choice for medium sized North American game.

Our test rifle gave best results throughout the range of bullets with Winchester 748, IMR 4064, and IMR 4320 powders. Our data was obtained from a test rifle with an 18½" barrel; however, up to 200 fps more velocity can be expected from the longer barrels of the 700 BDL models.

**7mm (.284" Dia.)**

**120 GR. SPIRE POINT #2810**

CARTRIDGE OVERALL LENGTH 2.730"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4320	36.0 gr.	37.3 gr.	38.6 gr.	39.9 gr.	41.1 gr.	42.4 gr.
N202	36.3 gr.	37.7 gr.	39.0 gr.	40.3 gr.	41.7 gr.	43.0 gr.
IMR 4064	37.4 gr.	38.6 gr.	39.8 gr.	41.0 gr.	42.2 gr.	43.4 gr.
WIN 748	37.7 gr.	39.0 gr.	40.4 gr.	41.7 gr.	43.1 gr.	
WIN 760	41.0 gr.	42.4 gr.	43.8 gr.	45.2 gr.	46.6 gr.	
H205	43.3 gr.	44.4 gr.	45.4 gr.	46.5 gr.	47.5 gr.	48.5 gr.

These data may also be used with the 7mm 120 gr. HP bullet, though overall length may vary.

**7mm (.284" Dia.)**

**139 GR. SPIRE POINT #2820**

CARTRIDGE OVERALL LENGTH 2.830"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4320	34.7 gr.	36.2 gr.	37.6 gr.	39.1 gr.	40.6 gr.
N202	34.7 gr.	36.2 gr.	37.7 gr.	39.2 gr.	40.6 gr.
IMR 4064	36.1 gr.	37.3 gr.	38.5 gr.	39.7 gr.	40.8 gr.
WIN 748	34.8 gr.	36.6 gr.	38.3 gr.	40.1 gr.	
WIN 760	39.6 gr.	41.0 gr.	42.5 gr.	44.0 gr.	
H205	41.1 gr.	42.3 gr.	43.5 gr.	44.7 gr.	45.9 gr.

**7mm (.284" Dia.)**

**154 GR. SPIRE POINT #2830**

CARTRIDGE OVERALL LENGTH 2.830"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
N202	33.2 gr.	34.8 gr.	36.3 gr.	37.9 gr.	
IMR 4320	33.8 gr.	35.1 gr.	36.5 gr.	37.9 gr.	39.2 gr.
IMR 4064	34.0 gr.	35.4 gr.	36.9 gr.	38.3 gr.	39.7 gr.
WIN 748	35.0 gr.	36.4 gr.	37.7 gr.	39.0 gr.	
WIN 760	37.6 gr.	39.2 gr.	40.8 gr.	42.4 gr.	
IMR 4350	38.2 gr.	39.8 gr.	41.4 gr.	43.0 gr.	
H205	38.9 gr.	40.3 gr.	41.6 gr.	42.9 gr.	44.3 gr.
WIN 785	41.6 gr.	43.0 gr.	44.3 gr.	45.6 gr.	46.9 gr.

These data may also be used with the 7mm 154 gr. RN Bullet, though overall length may vary.

 Indicates maximum load • use with caution



**7mm (.284" Dia.)**

**162 GR. BOAT TAIL  
HOLLOW POINT #2840**

**CARTRIDGE OVERALL LENGTH 2.850"**



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4064	32.8 gr.	34.0 gr.	35.2 gr.	36.5 gr.	37.7 gr.	
N202	32.2 gr.	33.6 gr.	35.0 gr.	36.4 gr.	37.8 gr.	
IMR 4320	32.5 gr.	33.9 gr.	35.2 gr.	36.5 gr.	37.9 gr.	
WIN 748	33.2 gr.	34.7 gr.	36.2 gr.	37.8 gr.		
IMR 4350		38.0 gr.	39.5 gr.	41.0 gr.	42.5 gr.	
H205	36.7 gr.	38.1 gr.	39.6 gr.	41.1 gr.	42.6 gr.	
WIN 760		37.7 gr.	39.4 gr.	41.1 gr.	42.8 gr.	
WIN 785		41.4 gr.	42.8 gr.	44.2 gr.	45.6 gr.	47.0 gr.

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

**7mm (.284" Dia.)**

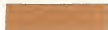
**175 GR. SPIRE POINT #2850**

**CARTRIDGE OVERALL LENGTH 2.810"**

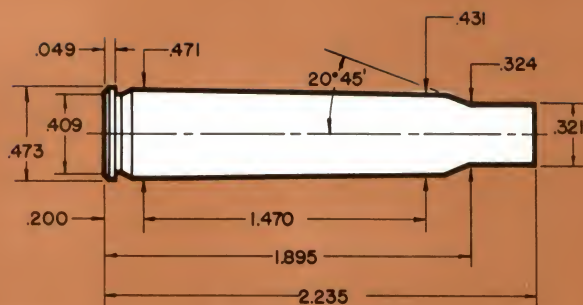


POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 4064	32.7 gr.	34.0 gr.	35.3 gr.	36.6 gr.	
IMR 4320	32.7 gr.	34.1 gr.	35.4 gr.	36.8 gr.	
N202	31.5 gr.	33.3 gr.	35.1 gr.	37.0 gr.	
WIN 748	33.1 gr.	34.7 gr.	36.2 gr.	37.8 gr.	
H205	36.4 gr.	37.9 gr.	39.3 gr.	40.8 gr.	42.3 gr.
WIN 760	36.7 gr.	38.2 gr.	39.8 gr.	41.3 gr.	
IMR 4350		37.8 gr.	39.8 gr.	41.8 gr.	
WIN 785	40.4 gr.	41.7 gr.	43.1 gr.	44.4 gr.	45.7 gr.

These data may also be used with the 175 gr. RN Bullet, though overall length may vary.



*Indicates maximum load • use with caution*



## 7 x 57mm MAUSER

**RIFLE:** RUGER 77

**BARREL:** 22", 1 in 9½" TWIST

**CASE:** WINCHESTER

**PRIMER:** FEDERAL 210

Originally a military round, the 7 x 57mm is a popular and effective sporting round. Mauser developed the cartridge in 1892 and the Americans encountered the 7 x 57mm in 1898 when they faced the Spanish. Most American manufacturers provide loaded ammunition, but few offer rifles chambered for the 7 x 57mm, which is done primarily to maintain a strong market for the American 7mm Calibers. It is more popular in the European countries where rimmed versions of the 7 x 57mm are also available — these are usually chambered in combination guns and the maximum loads listed here should be reduced 10 to 15%.

Ballistically, the 7mm Mauser is only slightly less powerful than the 270 Winchester, 280 Remington, and the 284 Winchester. The cartridge is more than adequate for nearly all North American big game and a great many of the plains game of Africa.

Powders that produced best results in our rifle were IMR 4064, Winchester 760, and H450. The 139 grain Spire Point and 154 grain Spire Point make ideal medium game bullets, with the 175 grain Spire Point being better suited for elk and other large game.

Since silhouette shooting has become such a popular sport, the 7mm Mauser has yet another area to display its versatility. With its mild recoil, flat trajectory, and the Hornady 162 grain Match Boat Tail Hollow Point, the 7 x 57mm is an excellent choice.

7mm (.284" Dia.)

120 GRAIN SPIRE POINT #2810

CARTRIDGE OVERALL LENGTH 3.000"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4895	40.5 gr.	41.8 gr.	43.1 gr.	44.4 gr.	45.7 gr.	
IMR 3031	40.6 gr.	42.0 gr.	43.5 gr.	45.0 gr.		
N203	41.0 gr.	42.4 gr.	43.8 gr.	45.3 gr.	46.7 gr.	48.1 gr.
IMR 4320	42.5 gr.	43.9 gr.	45.2 gr.	46.6 gr.	48.0 gr.	
IMR 4064	42.6 gr.	43.8 gr.	44.9 gr.	46.0 gr.		
WIN 760	46.6 gr.	48.3 gr.	49.9 gr.	51.6 gr.	53.3 gr.	54.9 gr.
IMR 4350	47.8 gr.	49.2 gr.	50.7 gr.	52.1 gr.	53.6 gr.	
IMR 4831	49.5 gr.	51.1 gr.	52.8 gr.	54.4 gr.		
NORMA MRP	51.0 gr.	52.8 gr.	54.6 gr.	56.3 gr.	58.1 gr.	
H450	51.4 gr.	53.2 gr.	55.0 gr.	56.9 gr.	58.7 gr.	

These data may also be used with the 7mm 120 gr. HP bullet, though overall length may vary.

7mm (.284" Dia.)

139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.000"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4895	39.7 gr.	41.1 gr.	42.5 gr.		
N203	40.1 gr.	41.6 gr.	43.1 gr.	44.7 gr.	
IMR 3031	40.2 gr.	41.6 gr.	42.9 gr.	44.3 gr.	
IMR 4064	41.6 gr.	42.8 gr.	44.1 gr.	45.3 gr.	
IMR 4320	42.0 gr.	43.3 gr.	44.6 gr.	46.0 gr.	
WIN 760	44.5 gr.	46.5 gr.	48.5 gr.	50.4 gr.	52.4 gr.
IMR 4350	46.7 gr.	48.3 gr.	49.9 gr.	51.4 gr.	53.0 gr.
IMR 4831	48.2 gr.	49.7 gr.			
H450	49.4 gr.	51.4 gr.	53.4 gr.	55.4 gr.	57.3 gr.
NORMA MRP	49.7 gr.	51.4 gr.	53.1 gr.	54.8 gr.	

Indicates maximum load • use with caution.



**7mm (.284" Dia.)**  
**154 GRAIN SPIRE POINT #2830**



CARTRIDGE OVERALL LENGTH 3.000"

VELOCITY							
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4895	37.2 gr.	38.7 gr.	40.2 gr.				
N203	37.1 gr.	38.8 gr.	40.6 gr.	42.2 gr.	44.0 gr.		
IMR 3031	37.8 gr.	39.2 gr.	40.6 gr.	42.0 gr.			
IMR 4064	38.8 gr.	40.1 gr.	41.3 gr.	42.6 gr.			
IMR 4320	39.1 gr.	40.5 gr.	41.9 gr.	43.4 gr.	44.8 gr.		
WIN 760	42.5 gr.	44.3 gr.	46.0 gr.	47.7 gr.	49.5 gr.	51.2 gr.	
IMR 4350	43.0 gr.	44.6 gr.	46.1 gr.	47.7 gr.			
IMR 4831	45.4 gr.	46.8 gr.					
H450	46.2 gr.	47.9 gr.	49.7 gr.	51.5 gr.	53.3 gr.	55.0 gr.	56.8 gr.
NORMA MRP	46.8 gr.	48.3 gr.	49.8 gr.	51.4 gr.			

These data may also be used with the 7mm 154 gr. RN bullet, though overall length may vary.

**7mm (.284" Dia.)**  
**162 GRAIN BOAT TAIL**  
**HOLLOW POINT #2840**



CARTRIDGE OVERALL LENGTH 3.000"

VELOCITY						
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	37.3 gr.	38.7 gr.	40.0 gr.			
N203	36.5 gr.	38.4 gr.	40.3 gr.	42.1 gr.		
IMR 4895	37.4 gr.	38.7 gr.	39.9 gr.	41.2 gr.		
IMR 4064	38.1 gr.	39.5 gr.	40.9 gr.	42.3 gr.		
IMR 4320	38.4 gr.	39.9 gr.	41.4 gr.	43.0 gr.		
WIN 760	42.6 gr.	44.3 gr.	46.0 gr.	47.7 gr.	49.4 gr.	
IMR 4350	42.7 gr.	44.2 gr.				
IMR 4831	43.5 gr.	45.2 gr.	46.9 gr.			
H450	44.7 gr.	46.9 gr.	49.2 gr.	51.4 gr.	53.6 gr.	55.8 gr.
NORMA MRP	45.8 gr.	47.4 gr.	49.1 gr.	50.8 gr.	52.4 gr.	

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

 Indicates maximum load • use with caution



7mm (.284" Dia.)  
175 GRAIN ROUND NOSE #2855

CARTRIDGE OVERALL LENGTH 3.015"



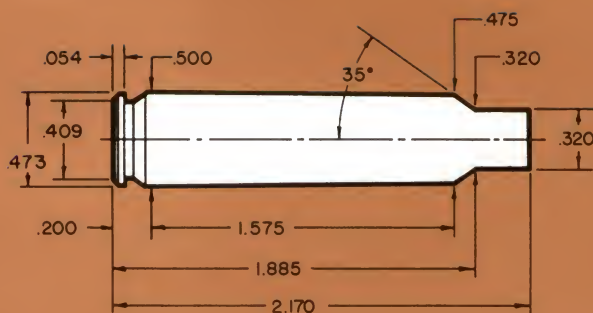
VELOCITY				
POWDER	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	36.8 gr.	38.4 gr.	40.0 gr.	
N203	36.7 gr.	38.7 gr.	40.6 gr.	42.6 gr.
IMR 4895	37.2 gr.	38.8 gr.	40.3 gr.	41.9 gr.
IMR 4064	37.9 gr.	39.4 gr.	40.9 gr.	42.4 gr.
IMR 4320	38.8 gr.	40.3 gr.	41.8 gr.	
WIN 760	42.2 gr.	43.8 gr.	45.4 gr.	47.0 gr.
IMR 4350	42.9 gr.	44.3 gr.		
IMR 4831	44.2 gr.	45.6 gr.		
H450	45.3 gr.	47.2 gr.	49.0 gr.	50.9 gr.
NORMA MRP	46.1 gr.	47.6 gr.	49.1 gr.	

These data may also be used with the 7mm 175 gr. SP bullet, though overall length may vary.

7 X 57MM MAUSER



Indicates maximum load • use with caution



## 284 WINCHESTER

**RIFLE: WINCHESTER MODEL 70 CUSTOM**

**BARREL: 22", 1 in 10" TWIST**

**CASE: WINCHESTER**

**PRIMER: REMINGTON 9½**

The 284 Winchester is a 7mm cartridge designed to approximate 270 Winchester performance and still function through Winchester's short Model 88 and Model 100 rifles. To accomplish this, Winchester developed a unique case with a rebated rim the size of the 308's, a larger case head, and a body nearly the size of the big belted magnums.

The interesting new 284 case inspired a great surge of wildcatting activity. The case has been necked down to 22, 6mm, 25, and 6.5mm calibers and up to 30 and 35 calibers, producing wildcats similar to those based on the 30-06 case but better adapted to short actions. One problem of the 284's design is the short case neck which means that long bullets must be seated deeply in the case in lever and autoloading actions. Custom bolt actions can be made to take this problem into account and thus maintain the full velocity potential of the 284.

In our custom Model 70 test rifle, 154 grain Hornady Spire Points could be driven up to 2900 fps, and all 7mm bullets delivered excellent accuracy. The 284 is adequate for all North American game, as are its ballistic counterparts the 270 and the 280.

**7mm (.284" Dia.)**

**120 GRAIN SPIRE POINT #2810**

**CARTRIDGE OVERALL LENGTH 2.905"**



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	42.0 gr.	44.0 gr.	46.0 gr.	48.0 gr.	
IMR 4064	43.8 gr.	45.6 gr.	47.4 gr.	49.2 gr.	
H4895	45.1 gr.	46.8 gr.	48.5 gr.	50.3 gr.	52.0 gr.
IMR 4320	46.5 gr.	48.1 gr.	49.8 gr.	51.5 gr.	53.2 gr.
H380	46.1 gr.	48.4 gr.	50.7 gr.	52.9 gr.	55.2 gr.
IMR 4350	52.1 gr.	53.6 gr.	55.0 gr.	56.5 gr.	58.0 gr.
H4831	54.5 gr.	56.1 gr.	57.7 gr.	59.4 gr.	61.0 gr.

\*These data may also be used with the 7mm 120 gr. Hollow Point, though overall length may vary.

**7mm (.284" Dia.)**

**139 GRAIN SPIRE POINT #2820**

**CARTRIDGE OVERALL LENGTH 2.885"**



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	42.2 gr.	44.3 gr.	46.4 gr.		
IMR 4064	43.3 gr.	45.2 gr.	47.2 gr.	49.1 gr.	
H4895	44.7 gr.	46.5 gr.	48.3 gr.	50.1 gr.	
IMR 4320	45.3 gr.	47.1 gr.	49.0 gr.	50.9 gr.	
H380	46.3 gr.	48.5 gr.	50.7 gr.	52.9 gr.	
IMR 4350	50.0 gr.	51.8 gr.	53.5 gr.	55.3 gr.	57.1 gr.
H4831	52.8 gr.	54.4 gr.	56.1 gr.	57.7 gr.	59.3 gr.

*Indicates maximum load • use with caution*

**7mm (.284" Dia.)**  
**154 GRAIN SPIRE POINT #2830**

CARTRIDGE OVERALL LENGTH 2.950"



VELOCITY					
POWDER	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	40.5 gr.	42.5 gr.	44.4 gr.	46.3 gr.	
IMR 4064	40.9 gr.	42.9 gr.	44.9 gr.	46.8 gr.	
H4895	42.2 gr.	44.2 gr.	46.1 gr.	48.0 gr.	
IMR 4320	42.4 gr.	44.5 gr.	46.6 gr.	48.7 gr.	
H380	43.7 gr.	45.9 gr.	48.2 gr.	50.4 gr.	
IMR 4350	46.8 gr.	48.7 gr.	50.7 gr.	52.6 gr.	54.5 gr.
H4831	48.8 gr.	50.9 gr.	52.9 gr.	55.0 gr.	57.1 gr.
H450	50.9 gr.	53.0 gr.	55.0 gr.	57.1 gr.	59.1 gr.

\*These data may also be used with the 7mm 154 gr. Round Nose, though overall length may vary.

**7mm (.284" Dia.)**  
**175 GRAIN ROUND NOSE #2855**

CARTRIDGE OVERALL LENGTH 2.895"

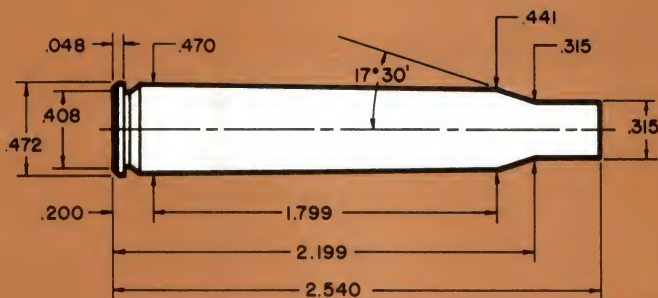


VELOCITY					
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	37.7 gr.	39.8 gr.	41.9 gr.	44.1 gr.	
IMR 4064	38.9 gr.	40.9 gr.	42.9 gr.	44.9 gr.	
H4895	40.2 gr.	42.2 gr.	44.1 gr.	46.0 gr.	
IMR 4320	40.4 gr.	42.5 gr.	44.5 gr.	46.6 gr.	
H380	41.4 gr.	43.7 gr.	46.0 gr.	48.4 gr.	
IMR 4350	44.8 gr.	46.5 gr.	48.2 gr.	50.0 gr.	51.7 gr.
H4831	46.6 gr.	48.5 gr.	50.5 gr.	52.4 gr.	54.3 gr.
H450	48.2 gr.	50.2 gr.	52.2 gr.	54.3 gr.	56.3 gr.

\*These data may also be used with the 7mm 175 gr. Spire Point, though overall length may vary.

*Indicates maximum load • use with caution*





## 280 REMINGTON/7mm EXPRESS REMINGTON

**RIFLE:** REMINGTON MODEL 725

**BARREL:** 22", 1 in 10" TWIST

**CASE:** REMINGTON

**PRIMER:** REMINGTON 9½

In 1957 Remington introduced the 280 in their Model 740 autoloader. It was not until later that the round was chambered in their bolt action models.

The 280 is based on the 30-06 case and is slightly longer than the 270 to prevent accidental chambering.

The 280 has never been as popular as the 270. The major reason for this probably lies in the fact that it was not offered to the shooting public until 32 years after the 270 and offered no appreciable gain in ballistics. However, the 280 does have greater loading potential than the 270 because of the wider range of bullets available.

Recently Remington has renamed the 280 Remington, the 7mm Express Remington. The dimensions of the cartridge case will be the same, but with the new, improved, slow burning powders, maximum velocities should increase 100 fps, according to Remington. Remington's efforts to revive a fine cartridge are to be lauded, as the 280 has been, and always will be, an excellent big game cartridge capable of taking any big game on the North American continent. In most cases, its ballistics are better than or equal to those of the 270, the standard by which many cartridges are judged.

IMR 4350 and H4831 gave the best results throughout the range of bullets.

7mm (.284" Dia.)

120 GRAIN SPIRE POINT #2810

CARTRIDGE OVERALL LENGTH 3.295"



VELOCITY						
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	39.9 gr.	41.7 gr.	43.5 gr.	45.3 gr.	47.0 gr.	
IMR 4064	42.1 gr.	44.0 gr.	45.7 gr.	47.6 gr.	49.4 gr.	51.2 gr.
H4895	42.8 gr.	44.6 gr.	46.4 gr.	48.2 gr.	50.0 gr.	51.9 gr.
IMR 4320	43.6 gr.	45.4 gr.	47.2 gr.	49.0 gr.	50.9 gr.	52.7 gr.
H380	43.4 gr.	45.3 gr.	47.2 gr.	49.2 gr.	51.1 gr.	
WIN 760	47.0 gr.	49.1 gr.	51.1 gr.	53.1 gr.	55.2 gr.	57.2 gr.
IMR 4350	50.7 gr.	52.2 gr.	53.7 gr.	55.2 gr.	56.6 gr.	58.1 gr.
N204	50.1 gr.	52.3 gr.	54.5 gr.	56.7 gr.	58.9 gr.	
H4831	53.8 gr.	55.3 gr.	56.9 gr.	58.4 gr.	60.0 gr.	

\*These data may also be used with the 7mm 120 gr. Hollow Point, though overall length may vary.

7mm (.284" Dia.)

139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.345"



VELOCITY						
POWDER	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	40.7 gr.	42.5 gr.	44.3 gr.	46.2 gr.		
IMR 4064	41.6 gr.	43.4 gr.	45.2 gr.	47.0 gr.	48.9 gr.	
H4895	42.5 gr.	44.2 gr.	46.0 gr.	47.8 gr.	49.6 gr.	
IMR 4320	42.6 gr.	44.5 gr.	46.4 gr.	48.4 gr.	50.3 gr.	
H380	43.4 gr.	45.3 gr.	47.2 gr.	49.1 gr.	51.0 gr.	
WIN 760	46.4 gr.	48.6 gr.	50.8 gr.	53.0 gr.	55.2 gr.	
IMR 4350	49.1 gr.	50.7 gr.	52.3 gr.	53.8 gr.	55.4 gr.	57.0 gr.
H4831		53.0 gr.	54.6 gr.	56.3 gr.	57.9 gr.	59.5 gr.



*Indicates maximum load • use with caution*

7mm (.284" Dia.)  
154 GRAIN SPIRE POINT #2830

CARTRIDGE OVERALL LENGTH 3.380"



VELOCITY						
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	37.3 gr.	39.4 gr.	41.5 gr.	43.5 gr.	45.6 gr.	
IMR 4064	39.0 gr.	40.9 gr.	42.8 gr.	44.7 gr.	46.6 gr.	
H4895		41.8 gr.	43.7 gr.	45.6 gr.	47.5 gr.	49.4 gr.
IMR 4320	39.5 gr.	41.5 gr.	43.6 gr.	45.7 gr.	47.7 gr.	
H380	39.7 gr.	41.8 gr.	44.0 gr.	46.1 gr.	48.3 gr.	
WIN 760	43.7 gr.	45.6 gr.	47.5 gr.	49.4 gr.	51.3 gr.	53.2 gr.
IMR 4350		48.1 gr.	49.7 gr.	51.3 gr.	52.9 gr.	54.5 gr.
H4831		50.1 gr.	51.8 gr.	53.6 gr.	55.3 gr.	57.0 gr.
H450		48.4 gr.	50.8 gr.	53.2 gr.	55.7 gr.	58.1 gr.

\*These data may also be used with the 7mm 154 gr. Round Nose, though overall length may vary.

7mm (.284" Dia.)  
162 GRAIN BOAT TAIL  
HOLLOW POINT #2840

CARTRIDGE OVERALL LENGTH 3.370"



VELOCITY						
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	38.0 gr.	40.1 gr.	42.2 gr.	44.2 gr.		
H4895	40.5 gr.	42.3 gr.	44.1 gr.	45.9 gr.	47.7 gr.	
IMR 4064	39.7 gr.	41.8 gr.	43.9 gr.	46.0 gr.	48.1 gr.	
IMR 4320	40.9 gr.	42.9 gr.	44.8 gr.	46.8 gr.	48.8 gr.	
H380	41.0 gr.	43.2 gr.	45.3 gr.	47.5 gr.	49.6 gr.	
IMR 4350	44.6 gr.	46.4 gr.	48.2 gr.	50.0 gr.	51.8 gr.	53.6 gr.
WIN 760	44.3 gr.	46.2 gr.	48.1 gr.	50.0 gr.	51.9 gr.	
H450	48.6 gr.	50.3 gr.	51.9 gr.	53.6 gr.	55.2 gr.	
H4831	50.6 gr.	52.3 gr.	53.9 gr.	55.5 gr.	57.2 gr.	

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

 Indicates maximum load • use with caution

280 REMINGTON/7mm EXPRESS REMINGTON

7mm (.284" Dia.)

175 GRAIN ROUND NOSE #2855

CARTRIDGE OVERALL LENGTH 3.380"



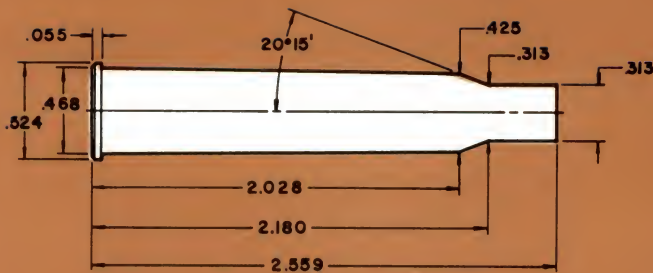
POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	37.1 gr.	39.4 gr.	41.6 gr.	43.8 gr.		
IMR 4064	38.1 gr.	40.4 gr.	42.6 gr.	44.9 gr.		
H4895	38.9 gr.	41.1 gr.	43.3 gr.	45.5 gr.		
IMR 4320	38.5 gr.	40.9 gr.	43.3 gr.	45.7 gr.	48.1 gr.	
H380	40.2 gr.	42.4 gr.	44.6 gr.	46.8 gr.		
IMR 4350		46.4 gr.	48.3 gr.	50.2 gr.	52.1 gr.	54.0 gr.
WIN 760	43.6 gr.	45.8 gr.	48.0 gr.	50.3 gr.	52.5 gr.	54.7 gr.
H4831		49.0 gr.	50.9 gr.	52.7 gr.	54.6 gr.	56.4 gr.
H450		48.9 gr.	51.0 gr.	53.0 gr.	55.0 gr.	57.0 gr.

\*These data may also be used with the 7mm 175 gr. Spire Point, though overall length may vary.



Indicates maximum load • use with caution





## 7 X 65R

**RIFLE: MAUSER 66**

**BARREL: 26", 1 in 9¼" TWIST**

**CASE: RWS**

**PRIMER: FEDERAL 210**

The 7 X 65R is a cartridge developed by Wilhelm Brenneke in 1917. Its popularity remains mostly in Europe and is chambered most often in double rifles, drillings, and single shots.

Basically, the 7 X 65R is the same as the 280 Remington in case capacity and dimension. As a result anything hunted with the 280 Remington, can be hunted with the 7 X 65R.

Caution must be used when using the data presented here, as this data was obtained with a strong bolt action Mauser rifle. Normally, combination guns are not capable of handling loads equivalent to that of the bolt action. For this reason, loads should be reduced 10 to 15% when loading for combination guns.

Best accuracy and uniformity in our test rifle was obtained with IMR 4831 and IMR 4350. The 162 grain Match Boat Tail Hollow Point was not shown with this cartridge since it is not a target type cartridge, and the 162 grain bullet is not a hunting bullet.

7mm (.284" Dia.)  
120 GRAIN HOLLOW POINT #2815

CARTRIDGE OVERALL LENGTH 3.300"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	44.4 gr.	45.7 gr.	47.0 gr.	48.3 gr.	49.6 gr.
IMR 4350	49.9 gr.	51.1 gr.	52.4 gr.	53.7 gr.	54.9 gr.
N204	51.2 gr.	52.6 gr.	54.0 gr.	55.3 gr.	56.7 gr.
IMR 4831	52.1 gr.	53.3 gr.	54.4 gr.	55.6 gr.	
WIN 785	53.4 gr.	55.5 gr.	57.6 gr.	59.6 gr.	61.7 gr.
NORMA MRP	55.1 gr.	56.6 gr.	58.2 gr.	59.7 gr.	61.3 gr.

These data may also be used with the 7mm 120 gr. S.P. bullet, though overall length may vary.

7mm (.284" Dia.)  
139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.350"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	43.9 gr.	45.3 gr.	46.6 gr.	48.0 gr.	
IMR 4350	49.3 gr.	50.6 gr.	52.0 gr.	53.3 gr.	54.7 gr.
N204	50.5 gr.	51.9 gr.	53.3 gr.	54.7 gr.	56.0 gr.
IMR 4831	50.6 gr.	52.0 gr.	53.5 gr.	54.9 gr.	
WIN 785	52.2 gr.	54.3 gr.	56.4 gr.	58.5 gr.	
NORMA MRP	53.9 gr.	55.6 gr.	57.3 gr.	59.0 gr.	60.7 gr.

7mm (.284" Dia.)  
154 GRAIN SPIRE POINT #2830

CARTRIDGE OVERALL LENGTH 3.340"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	43.0 gr.	44.6 gr.	46.3 gr.		
IMR 4350	46.9 gr.	48.4 gr.	49.9 gr.	51.4 gr.	52.9 gr.
N204	49.3 gr.	50.7 gr.	52.1 gr.	53.5 gr.	
IMR 4831	49.4 gr.	50.9 gr.	52.5 gr.	54.0 gr.	55.6 gr.
WIN 785	51.1 gr.	53.1 gr.	55.1 gr.	57.1 gr.	
NORMA MRP	52.4 gr.	54.1 gr.	55.8 gr.	57.4 gr.	

These data may also be used with the 7mm 154 gr. R.N. bullet, though overall length may vary.

7mm (.284" Dia.)  
175 GRAIN SPIRE POINT #2850

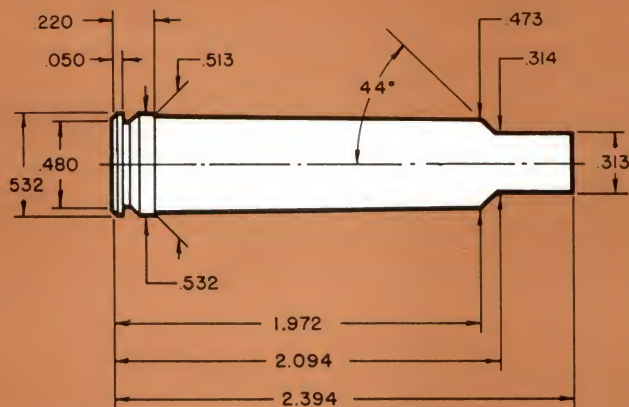
CARTRIDGE OVERALL LENGTH 3.300"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	40.9 gr.	42.5 gr.	44.1 gr.	45.7 gr.	
IMR 4350	43.7 gr.	45.4 gr.	47.2 gr.	49.0 gr.	50.7 gr.
N204	46.1 gr.	47.6 gr.	49.0 gr.	50.5 gr.	52.0 gr.
IMR 4831	46.0 gr.	47.9 gr.	49.8 gr.	51.7 gr.	53.6 gr.
WIN 785	47.7 gr.	49.4 gr.	51.2 gr.	53.0 gr.	54.8 gr.
NORMA MRP	48.9 gr.	50.6 gr.	52.2 gr.	53.8 gr.	55.5 gr.

These data may also be used with the 7mm 175 gr. RN bullet, though overall length may vary.

 Indicates maximum load • use with caution



# 7 X 61 SHARPE & HART

RIFLE: MAUSER MODEL 1898

**BARREL: 24", 1 in 12" TWIST**

### CASE: NORMA

PRIMER: FEDERAL 210

The 7 x 61 was developed by the well known handloading authority Phil Sharpe in collaboration with Richard F. Hart as a high velocity 7mm suitable for all North American game. It achieved factory production in 1953 in rifles produced by the Danish firm of Schultz and Larson. Ammunition is now produced by Norma.

Based on an experimental French 7mm military cartridge Sharpe discovered as an ordnance officer in WW II, the commercial version of the cartridge is belted and features a very abrupt shoulder. Its power falls between standard 7mm's and the 7mm Weatherby Magnum or more recent 7mm Remington Magnum.

The following 7 x 61 S&H once enjoyed has been far outstripped by the popularity of the more recent 7mm Remington Magnum. The older cartridge remains, however, a respectable performer, and for Sharpe & Hart owners who'd care to test its potential for long range target shooting we have included loads for our 7mm Boat Tail Hollow Point bullet.

If you want to see how the 7 x 61 stands in the company of the larger 7mm's, use the Ballistic Tables in this handbook in conjunction with loading data for the cartridges.



7mm (.284" Dia.)

120 GRAIN SPIRE POINT #2810

CARTRIDGE OVERALL LENGTH 3.230"



POWDER	VELOCITY					
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 3031	47.4 gr.	49.5 gr.	51.6 gr.	53.7 gr.		
H4895	49.8 gr.	51.8 gr.	53.9 gr.	55.9 gr.		
IMR 4064	50.6 gr.	52.4 gr.	54.2 gr.	56.1 gr.		
IMR 4320	50.3 gr.	52.4 gr.	54.4 gr.	56.5 gr.		
H380	50.8 gr.	53.0 gr.	55.2 gr.			
WIN 760	54.8 gr.	57.6 gr.	60.3 gr.			
IMR 4350	58.1 gr.	59.6 gr.	61.2 gr.	62.7 gr.	64.2 gr.	65.7 gr.
H4831	60.7 gr.	62.2 gr.	63.6 gr.	65.0 gr.	66.4 gr.	
H450	60.3 gr.	62.4 gr.	64.4 gr.	66.5 gr.	68.5 gr.	70.6 gr.

\* These data may also be used with the 7mm 120 gr. Hollow Point, though overall length may vary.

7mm (.284" Dia.)

139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.205"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	45.2 gr.	47.1 gr.	49.1 gr.	51.1 gr.	53.1 gr.	
H4895	46.6 gr.	48.8 gr.	51.1 gr.	53.3 gr.	55.5 gr.	
IMR 4064	47.1 gr.	49.2 gr.	51.3 gr.	53.4 gr.	55.5 gr.	
IMR 4320	46.8 gr.	49.1 gr.	51.4 gr.	53.7 gr.	56.0 gr.	
H380	49.0 gr.	51.4 gr.	53.8 gr.	56.2 gr.	58.6 gr.	
WIN 760	53.1 gr.	55.3 gr.	57.5 gr.	59.7 gr.		
IMR 4350	54.4 gr.	56.1 gr.	57.7 gr.	59.4 gr.	61.1 gr.	62.7 gr.
H4831		57.8 gr.	59.6 gr.	61.4 gr.	63.2 gr.	65.0 gr.
H450		58.8 gr.	60.8 gr.	62.8 gr.	64.9 gr.	66.9 gr.

Indicates maximum load • use with caution

7mm (.284" Dia.)

**154 GRAIN SPIRE POINT #2830**

CARTRIDGE OVERALL LENGTH 3.270"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	41.6 gr.	44.0 gr.	46.3 gr.	48.6 gr.	50.9 gr.	
H4895	44.0 gr.	46.1 gr.	48.2 gr.	50.3 gr.	52.4 gr.	
IMR 4064	43.7 gr.	46.0 gr.	48.2 gr.	50.5 gr.	52.7 gr.	
IMR 4320	44.4 gr.	46.7 gr.	48.9 gr.	51.1 gr.	53.3 gr.	55.6 gr.
H380	46.2 gr.	48.4 gr.	50.6 gr.	52.8 gr.	55.0 gr.	
WIN 760		53.6 gr.	57.3 gr.			
IMR 4350	51.3 gr.	53.1 gr.	54.9 gr.	56.6 gr.	58.4 gr.	60.2 gr.
H4831		55.6 gr.	57.3 gr.	59.0 gr.	60.6 gr.	62.3 gr.
H450		56.2 gr.	58.1 gr.	60.0 gr.	61.9 gr.	63.8 gr.

\*These data may also be used with the 7mm 154 gr. Round Nose, though overall length may vary.

7mm (.284" Dia.)

**162 GRAIN BOAT TAIL HOLLOW POINT #2840**

CARTRIDGE OVERALL LENGTH 3.155"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4895		46.1 gr.	47.7 gr.	49.3 gr.	50.9 gr.	
H380		46.4 gr.	48.4 gr.	50.3 gr.	52.3 gr.	
IMR 4320	45.0 gr.	46.9 gr.	48.7 gr.	50.6 gr.	52.5 gr.	54.3 gr.
IMR 4350		49.8 gr.	51.9 gr.	53.9 gr.	56.0 gr.	58.1 gr.
H450			57.2 gr.	59.0 gr.	60.7 gr.	62.4 gr.
H4831		55.8 gr.	57.6 gr.	59.5 gr.	61.3 gr.	

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

*Indicates maximum load • use with caution*

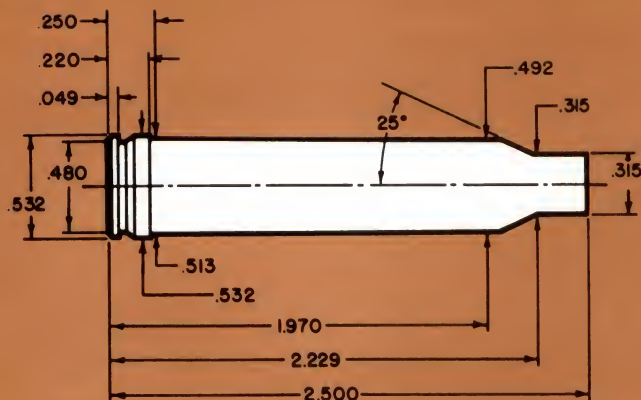
7mm (.284" Dia.)  
175 GRAIN ROUND NOSE #2855

CARTRIDGE OVERALL LENGTH 3.265"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	42.0 gr.	44.3 gr.	46.7 gr.	49.1 gr.		
H4895	43.9 gr.	46.2 gr.	48.5 gr.	50.8 gr.		
IMR 4064	43.8 gr.	46.2 gr.	48.6 gr.	51.0 gr.	53.4 gr.	
IMR 4320		46.7 gr.	49.1 gr.	51.6 gr.	54.1 gr.	
H380		48.7 gr.	51.3 gr.	54.0 gr.	56.5 gr.	
IMR 4350		51.8 gr.	54.0 gr.	56.1 gr.	58.3 gr.	60.5 gr.
H4831		53.9 gr.	56.0 gr.	58.2 gr.	60.3 gr.	62.5 gr.
H450		54.9 gr.	57.3 gr.	59.8 gr.	62.2 gr.	

\*These data may also be used with the 7mm 175 gr. Spire Point, though overall length may vary.



## 7mm REMINGTON MAGNUM

**RIFLE:** REMINGTON 700 BDL

**BARREL:** 24", 1 in 9" TWIST

**CASE:** FRONTIER

**PRIMER:** REMINGTON 9½M

In 1962 Remington introduced their 7mm Magnum in their also new Model 700 bolt action rifle. In almost two decades of use, this cartridge has become extremely popular, rivaling the 270, and possessing enough power to account for anything from varmints to moose. Its power is insignificantly different than the 7 X 61 Sharpe & Hart or the 7mm Weatherby Magnum, but its appeal arises primarily from availability of loaded ammunition and rifles from the numerous arms and ammunition companies. Another plus for the 7mm Magnum is that it is easier on barrels than such hot calibers as the 264 Winchester Magnum.

Our particular rifle gave more than adequate results with all powders listed — most powders tested had slow burning rates, since the faster powders would not yield adequate velocity. H205 gave the slowest velocities, but contributed fine accuracy with the 120 and 139 grain Spire Points. IMR 4831 was the best overall powder for our rifle. It produced velocities at or near the top with all bullet weights and provided the best overall groups with all the bullets. The 7mm Magnum is capable of fine accuracy, and is therefore a good candidate for the 162 grain Match Boat Tail Hollow Point.



7mm (.284" Dia.)

120 GRAIN HOLLOW POINT #2815

CARTRIDGE OVERALL LENGTH 3.240"



7mm REMINGTON MAGNUM

POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4320	52.9 gr.	54.7 gr.	56.5 gr.			
IMR 4350	57.1 gr.	59.3 gr.	61.6 gr.	63.8 gr.		
H205	58.5 gr.	60.6 gr.	62.7 gr.			
N204	59.5 gr.	61.7 gr.	64.0 gr.	66.2 gr.	68.5 gr.	
IMR 4831	60.1 gr.	62.4 gr.	64.6 gr.	66.8 gr.	69.0 gr.	
H450	61.7 gr.	64.1 gr.	66.5 gr.	68.9 gr.	71.2 gr.	73.6 gr.
WIN 785	62.8 gr.	65.1 gr.	67.5 gr.	69.8 gr.		
NORMA MRP	63.6 gr.	65.6 gr.	67.6 gr.	69.6 gr.	71.6 gr.	

These data may also be used with the 7mm 120 gr. SP bullet, though overall length may vary.

7mm (.284" Dia.)

139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.290"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	50.0 gr.	52.6 gr.	55.3 gr.		
IMR 4350	52.9 gr.	55.4 gr.	57.9 gr.	60.4 gr.	
H205	54.6 gr.	56.9 gr.	59.1 gr.		
N204	56.0 gr.	58.3 gr.	60.6 gr.	62.9 gr.	
IMR 4831	56.8 gr.	59.2 gr.	61.7 gr.	64.2 gr.	66.7 gr.
H450	58.6 gr.	61.4 gr.	64.2 gr.	67.1 gr.	
WIN 785	58.7 gr.	61.6 gr.	64.5 gr.	67.4 gr.	
NORMA MRP	59.7 gr.	62.2 gr.	64.7 gr.	67.2 gr.	

Indicates maximum load • use with caution

7mm (.284" Dia.)

**154 GRAIN SPIRE POINT #2830**

CARTRIDGE OVERALL LENGTH 3.290"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H205	53.2 gr.	55.1 gr.	56.9 gr.		
IMR 4350	52.4 gr.	54.6 gr.	56.9 gr.	59.2 gr.	
N204	54.3 gr.	56.5 gr.	58.7 gr.	61.0 gr.	63.2 gr.
IMR 4831	56.8 gr.	59.0 gr.	61.1 gr.	63.2 gr.	65.4 gr.
H450	57.1 gr.	59.7 gr.	62.3 gr.	64.9 gr.	
WIN 785	58.5 gr.	61.1 gr.	63.6 gr.	66.1 gr.	
NORMA MRP	58.8 gr.	61.1 gr.	63.5 gr.	65.8 gr.	
H870		72.5 gr.	74.7 gr.	76.9 gr.	79.1 gr.

These data may also be used with 7mm 154 gr. RN bullets, though overall length may vary.

7mm (.284" Dia.)

**162 GRAIN BOAT TAIL HOLLOW POINT #2840**

CARTRIDGE OVERALL LENGTH 3.290"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H205	51.8 gr.	54.1 gr.	56.5 gr.		
IMR 4350	51.0 gr.	53.8 gr.	56.6 gr.		
N204	53.8 gr.	56.4 gr.	58.9 gr.	61.4 gr.	
IMR 4831	54.6 gr.	57.2 gr.	59.8 gr.	62.4 gr.	
WIN 785	56.3 gr.	59.2 gr.	62.0 gr.	64.9 gr.	
H450	56.6 gr.	59.6 gr.	62.6 gr.	65.6 gr.	
NORMA MRP	58.0 gr.	60.5 gr.	62.9 gr.	65.3 gr.	
H870	69.8 gr.	72.1 gr.	74.3 gr.	76.5 gr.	78.8 gr.

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

*Indicates maximum load • use with caution*

7mm (.284" Dia.)

175 GRAIN SPIRE POINT #2850

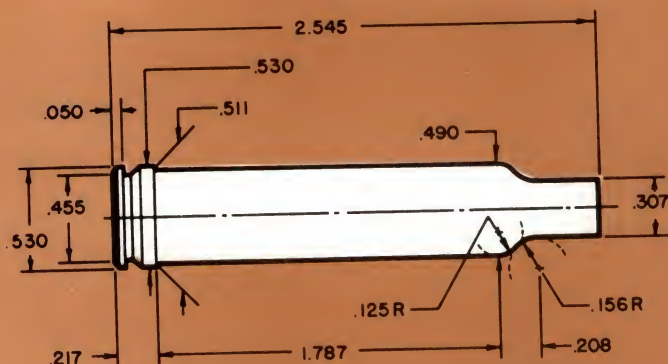
CARTRIDGE OVERALL LENGTH 3.260"



POWDER	VELOCITY			
	2500 fps	2600 fps	2700 fps	2800 fps
H205	50.4 gr.	52.9 gr.		
IMR 4350	50.5 gr.	53.1 gr.	55.7 gr.	
N204	53.0 gr.	55.5 gr.	57.9 gr.	
IMR 4831	53.0 gr.	55.9 gr.	58.8 gr.	
H450	54.9 gr.	58.1 gr.	61.2 gr.	
WIN 785	56.4 gr.	58.6 gr.	60.7 gr.	62.9 gr.
NORMA MRP	57.3 gr.	59.5 gr.	61.7 gr.	63.9 gr.
H870	69.3 gr.	71.4 gr.	73.5 gr.	75.6 gr.

These data may also be used with the 7mm 175 gr. RN bullet, though overall length may vary.

7mm REMINGTON MAGNUM



## 7mm WEATHERBY MAGNUM

**RIFLE:** WEATHERBY MARK V

**BARREL:** 24", 1 in 12" TWIST

**CASE:** WEATHERBY

**PRIMER:** FEDERAL 215

When comparing 7mm Magnums ballistically, the Weatherby has a slight edge over the 7mm Remington Magnum and boasts a strong 200 fps advantage in velocity over the 7 X 61 Sharpe & Hart.

Weatherby introduced this cartridge in 1944 with its popularity growing only moderately since its inception. Basically, its growth has been hampered by the 300 Weatherby Magnum which soundly overshadows the 7mm in power. The 7mm Weatherby case is based on a shortened 300 H & H case and incorporates the familiar Weatherby double radius shoulder.

The 7mm Weatherby Magnum is an excellent cartridge for plains or mountain regions because of its long range, flat trajectory, and good remaining energy. When fired at 2900 fps, the Hornady 175 grain Spire Point still has 2000 foot pounds of energy left at 300 yards.

Our rifle showed excellent uniformity and accuracy with IMR 4831 throughout the range of bullets. Good results were also obtained with Norma MRP and H450. With cartridges of such large case capacity, it is always best to keep loads at near maximum charges to prevent hangfires and erratic velocities.



7mm (.284" Dia.)

## 120 GRAIN SPIRE POINT #2810

CARTRIDGE OVERALL LENGTH 3.310"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4064	55.2 gr.	56.7 gr.	58.1 gr.			
IMR 4320	56.8 gr.	58.5 gr.	60.1 gr.			
IMR 4350	65.8 gr.	67.1 gr.	68.5 gr.	69.8 gr.	71.1 gr.	72.5 gr.
N204	66.0 gr.	68.1 gr.	70.2 gr.	72.3 gr.		
H4831	67.0 gr.	68.5 gr.	70.1 gr.	71.6 gr.	73.1 gr.	74.7 gr.
IMR 4831	67.7 gr.	69.5 gr.	71.2 gr.	73.0 gr.	74.7 gr.	
H450		68.5 gr.	70.6 gr.	72.7 gr.	74.8 gr.	76.9 gr.
NORMA MRP	69.7 gr.	71.6 gr.	73.6 gr.	75.6 gr.	77.6 gr.	

These data may also be used with the 7mm 120 gr. HP bullet, though overall length may vary.

7mm WEATHERBY MAGNUM

7mm (.284" Dia.)

## 139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 3.330"



POWDER	VELOCITY					
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	54.6 gr.	56.5 gr.	58.3 gr.			
IMR 4320	55.2 gr.	57.1 gr.	59.0 gr.	60.9 gr.		
IMR 4350		62.6 gr.	64.5 gr.	66.4 gr.	68.2 gr.	70.1 gr.
N204	63.5 gr.	65.4 gr.	67.3 gr.	69.3 gr.		
IMR 4831	64.9 gr.	66.6 gr.	68.3 gr.	69.9 gr.		
H4831		67.4 gr.	68.8 gr.	70.2 gr.	71.7 gr.	73.1 gr.
H450			67.9 gr.	69.9 gr.	71.8 gr.	
NORMA MRP	67.3 gr.	69.1 gr.	71.0 gr.	72.8 gr.	74.7 gr.	

Indicates maximum load • use with caution

## 7mm (.284" Dia.)

### 154 GRAIN SPIRE POINT #2830

CARTRIDGE OVERALL LENGTH 3.340"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	52.2 gr.	54.2 gr.	56.2 gr.	58.2 gr.		
IMR 4320	55.3 gr.	57.2 gr.	59.2 gr.	61.1 gr.		
IMR 4350	60.3 gr.	62.0 gr.	63.8 gr.	65.5 gr.	67.2 gr.	68.9 gr.
N204	61.6 gr.	63.7 gr.	65.8 gr.	67.9 gr.		
IMR 4831	62.9 gr.	64.8 gr.	66.7 gr.	68.6 gr.		
H4831		65.8 gr.	67.3 gr.	68.9 gr.	70.4 gr.	71.9 gr.
H450			67.2 gr.	69.2 gr.	71.1 gr.	73.1 gr.
NORMA MRP	64.9 gr.	67.0 gr.	69.2 gr.	71.3 gr.		

These data may also be used with the 7mm 154 gr. RN bullet, though overall length may vary.

## 7mm (.284" Dia.)

### 162 GRAIN BOAT TAIL HOLLOW POINT #2840

CARTRIDGE OVERALL LENGTH 3.375"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	50.6 gr.	53.0 gr.	55.4 gr.	57.7 gr.	
IMR 4320	52.2 gr.	54.4 gr.	56.7 gr.	58.9 gr.	
IMR 4350	55.1 gr.	57.4 gr.	59.7 gr.	62.0 gr.	
N204	59.5 gr.	61.5 gr.	63.5 gr.	65.5 gr.	
IMR 4831	60.4 gr.	62.4 gr.	64.4 gr.	66.4 gr.	
H450	61.9 gr.	63.8 gr.	65.7 gr.	67.7 gr.	
H4831	62.5 gr.	64.5 gr.	66.6 gr.	68.7 gr.	70.8 gr.
NORMA MRP	62.0 gr.	64.4 gr.	66.8 gr.	69.1 gr.	71.5 gr.

These data may also be used with the 7mm 162 gr. BTSP bullet, though overall length may vary.

*Indicates maximum load • use with caution*

7mm (.284" Dia.)

175 GRAIN SPIRE POINT #2850

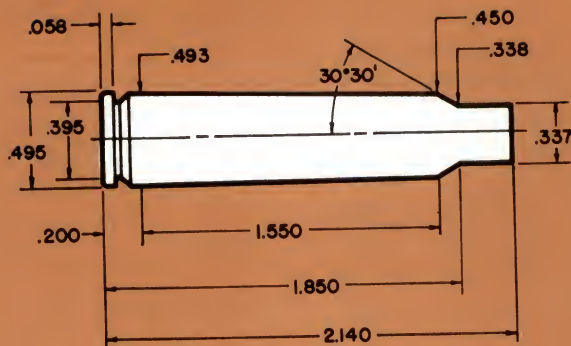
CARTRIDGE OVERALL LENGTH 3.310"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 4064	49.6 gr.	51.6 gr.	53.7 gr.	55.7 gr.		
IMR 4320	49.7 gr.	52.2 gr.	54.8 gr.	57.3 gr.		
IMR 4350		57.9 gr.	60.0 gr.	62.1 gr.	64.2 gr.	66.3 gr.
N204	56.7 gr.	58.8 gr.	60.9 gr.	63.0 gr.		
IMR 4831	57.9 gr.	59.8 gr.	61.7 gr.	63.5 gr.	65.4 gr.	
H4831		61.9 gr.	63.8 gr.	65.8 gr.	67.7 gr.	69.6 gr.
H450		62.0 gr.	64.0 gr.	65.9 gr.	67.9 gr.	
NORMA MRP		61.4 gr.	63.7 gr.	66.1 gr.	68.4 gr.	70.8 gr.

These data may also be used with the 7mm cal. 175 gr. RN bullet, though overall length may vary.

7mm WEATHERBY MAGNUM



## 7.5mm SCHMIDT RUBIN (7.5mm SWISS)

**RIFLE:** SCHMIDT RUBIN MODEL 1896/11

**BARREL:** 30.7", 1 in 10.6" TWIST

**CASE:** SWISS

**PRIMER:** BERDAN 217B

Though the 7.5mm Schmidt Rubin (7.5mm Swiss) cartridge is not likely to become this nation's favorite, its use will grow as import sales of surplus Swiss rifles increase.

The 7.5mm Schmidt Rubin, officially adopted by the Swiss in 1889, is a distinctive straight pull bolt action rifle which in four basic models (1889, 1896/11, 1911, and 31) has been in service from its introduction until the present. (Its replacement, the new Model 57 assault rifle which fires the standard Model 117.5mm Schmidt Rubin cartridge.)

The Model 11 7.5mm Schmidt Rubin cartridge, a more potent version of the first cartridge developed for the 7.5mm rifle, was loaded with a .307" 174 grain bullet to a velocity of 2720 fps. Regular 30 caliber (.308") bullets may be used to reload the cartridge. Reloaders should note, however, that the Model 11 cartridge for which loading data is given is suitable for use only in Model 1896/11, Model 1911, or Model 31 Schmidt Rubin rifles.

Because the case head is not fully supported in Schmidt Rubin rifles, overloads can be extremely dangerous. A ruptured case or blown primer can send hot gas back through the action to wreck both rifle and shooter. *Approach maximum loads listed with extra caution.*



**30 CALIBER (.308" Dia.)**  
**130 GRAIN SPIRE POINT #3020**

CARTRIDGE OVERALL LENGTH 2.815"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	35.5 gr.	37.4 gr.	39.2 gr.	41.1 gr.	43.0 gr.
IMR 4064	37.7 gr.	39.6 gr.	41.5 gr.	43.4 gr.	45.3 gr.
H4895	38.0 gr.	40.0 gr.	42.0 gr.	44.0 gr.	46.0 gr.
IMR 4320	40.4 gr.	42.2 gr.	44.0 gr.	45.8 gr.	47.6 gr.
IMR 4350	45.6 gr.	47.5 gr.	49.3 gr.	51.2 gr.	53.0 gr.

**30 CALIBER (.308" Dia.)**  
**150 GRAIN SPIRE POINT #3031**

CARTRIDGE OVERALL LENGTH 2.790"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031		35.4 gr.	37.7 gr.	40.0 gr.	42.2 gr.	44.5 gr.
IMR 4064	35.5 gr.	37.6 gr.	39.7 gr.	41.8 gr.	44.0 gr.	46.1 gr.
H4895	36.3 gr.	38.4 gr.	40.5 gr.	42.6 gr.	44.6 gr.	46.7 gr.
IMR 4320		38.6 gr.	40.8 gr.	43.1 gr.	45.4 gr.	47.6 gr.
IMR 4350		44.8 gr.	46.8 gr.	48.8 gr.	50.8 gr.	52.8 gr.

\*These data may also be used with the 30 cal. 150 gr. Round Nose, though overall length may vary.

**30 CALIBER (.308" Dia.)**  
**165 GRAIN SPIRE POINT #3040**

CARTRIDGE OVERALL LENGTH 2.910"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	32.4 gr.	34.9 gr.	37.4 gr.	39.9 gr.	42.4 gr.	
IMR 4064	33.7 gr.	36.1 gr.	38.5 gr.	40.8 gr.	43.2 gr.	
H4895	34.5 gr.	36.7 gr.	38.9 gr.	41.1 gr.	43.3 gr.	45.5 gr.
IMR 4320	35.8 gr.	38.0 gr.	40.2 gr.	42.4 gr.	44.6 gr.	46.8 gr.
IMR 4350		41.4 gr.	43.9 gr.	46.4 gr.	49.9 gr.	51.4 gr.

\*These data may also be used with the 30 cal. 165 gr. BTSP bullet.

*Indicates maximum load • use with caution*

7.5mm SCHMIDT RUBIN (7.5mm SWISS)

**30 CALIBER (.308" Dia.)**  
**168 GRAIN BOAT TAIL**  
**HOLLOW POINT #3050**



CARTRIDGE OVERALL LENGTH 3.025"

POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	33.7 gr.	35.9 gr.	38.2 gr.	40.4 gr.	42.7 gr.
IMR 4064	35.5 gr.	37.5 gr.	39.5 gr.	41.5 gr.	43.6 gr.
H4895	36.0 gr.	38.3 gr.	40.6 gr.	42.8 gr.	45.1 gr.
IMR 4320	37.0 gr.	39.3 gr.	41.6 gr.	43.9 gr.	46.2 gr.
IMR 4350	38.6 gr.	41.3 gr.	43.9 gr.	46.6 gr.	49.2 gr.

**30 CALIBER (.308" Dia.)**  
**180 GRAIN SPIRE POINT #3070**

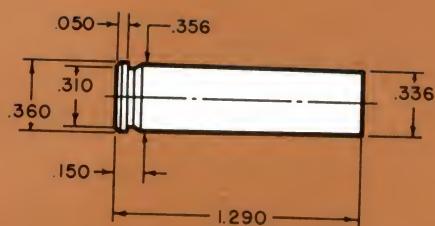


CARTRIDGE OVERALL LENGTH 2.900"

POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	33.5 gr.	35.6 gr.	37.7 gr.	39.8 gr.	
IMR 4064	34.7 gr.	37.0 gr.	39.3 gr.	41.5 gr.	
H4895	34.8 gr.	37.1 gr.	39.4 gr.	41.6 gr.	
IMR 4320	35.7 gr.	37.8 gr.	39.9 gr.	42.0 gr.	
IMR 4350	38.1 gr.	40.5 gr.	42.8 gr.	45.1 gr.	47.5 gr.

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

 Indicates maximum load • use with caution



## 30 M1 CARBINE

**RIFLE: INLAND CALIBER 30 M1 CARBINE**

**BARREL: 17½", 1 in 16" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 200**

The 30 Carbine had its origin in 1940 when the U.S. Ordnance Department adopted the round as a replacement for the 45 caliber semi-auto sidearm. In 1963 thousands of 30 M1 Carbines were released by the U.S. Government through the National Rifle Association. The price was right, and surplus ammo was cheap and readily available. More than anything the original cost of the firearm and ammunition for this caliber has kept it alive and well. Then too, the populace has long had a romance for the 30 Carbine; in fact, many 22 rimfire copies are available to the shooting public today. The 30 M1 Carbine is not a highly accurate or deadly round. Its primary use is as a defense weapon and as a hunting round it should be limited to plinking and small game.

Reloading for the 30 M1 Carbine is easy and economical. The Hornady 100 grain Short Jacket and the 110 grain Round Nose give good accuracy and optimum expansion at 30 Carbine velocities.

# **30 CALIBER (.308" Dia.)** **100 GRAIN SHORT JACKET #3005**

**CARTRIDGE OVERALL LENGTH 1.680"**



POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
H110	10.8 gr.	11.8 gr.	12.9 gr.	13.9 gr.	14.9 gr.
2400	11.3 gr.	12.2 gr.	13.0 gr.	13.9 gr.	
296	11.6 gr.	12.6 gr.	13.7 gr.	14.7 gr.	15.7 gr.
IMR 4227	12.5 gr.	13.3 gr.	14.1 gr.	15.0 gr.	15.8 gr.
680	14.5 gr.	15.4 gr.	16.3 gr.	17.1 gr.	18.0 gr.

# **30 CALIBER (.308" Dia.)** **110 GRAIN ROUND NOSE #3015**

**CARTRIDGE OVERALL LENGTH 1.680"**

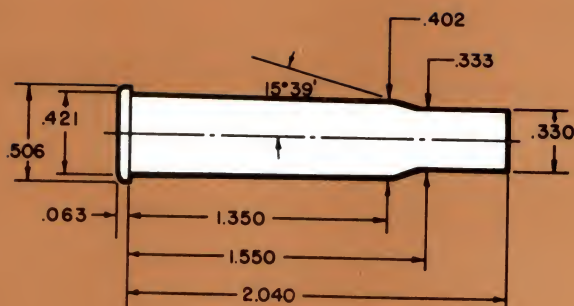


POWDER	VELOCITY				
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
H110	11.0 gr.	12.1 gr.	13.2 gr.	14.3 gr.	
2400	11.4 gr.	12.3 gr.	13.2 gr.	14.1 gr.	
IMR 4227	12.2 gr.	13.1 gr.	14.0 gr.	15.0 gr.	
296	12.4 gr.	13.2 gr.	14.1 gr.	14.9 gr.	
680	14.2 gr.	15.2 gr.	16.1 gr.	17.1 gr.	

These data may also be used with the 30 Cal. 110 gr. FMJ.

*Indicates maximum load • use with caution*





## 30-30 WINCHESTER

**RIFLE:** WINCHESTER 94

**BARREL:** 20", 1 in 12" TWIST

**CASE:** FRONTIER

**PRIMER:** FEDERAL 210

The 30-30 is one of America's favorite deer calibers and has been since 1895 when it was first introduced by Winchester. The reason is simple. It has always been chambered in a fast handling, dependable, and moderately priced firearm with adequate knock down power. For the deer hunter who hunts areas where 100-150 yards are the longest shots, the 30-30 is more than sufficient.

The 30-30 is largely found in carbine type firearms with lever actions like the Winchester Model 94 and the Marlin Model 336 heading the list. It can also be found in a few bolt actions and is quite popular in Europe where it is found mainly in combination guns.

Hornady supplies three bullets that are designed expressly for the 30-30 and its velocities: the 170 grain Flat Point, the 150 grain Round Nose, and the 110 grain Round Nose. All bullets designed for the 30-30 have blunt, soft noses. Spire Points or Full Metal Jacketed bullets should not be fired in rifles with tubular magazines as they can initiate the detonation of the remaining rounds in the magazine from the recoil.

When reloading for lever actions, reloading dies should be set to full-length resize. Lever actions do not have the camming action of a bolt action and therefore require the cases to be sized to a greater degree for proper functioning.

In our test rifle, Winchester 748 and N202 gave the best results in accuracy and uniformity.

# **30 CALIBER (.308" Dia.)** **100 GRAIN SHORT JACKET #3005**

CARTRIDGE OVERALL LENGTH 2.435"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H322	30.4 gr.	31.7 gr.	33.1 gr.	34.4 gr.		
IMR 3031	31.0 gr.	32.1 gr.	33.1 gr.	34.2 gr.	35.3 gr.	
BL-C2	33.3 gr.	34.4 gr.	35.5 gr.	36.6 gr.	37.7 gr.	38.8 gr.
N202	34.1 gr.	35.5 gr.	36.9 gr.	38.3 gr.		

# **30 CALIBER (.308" Dia.)** **110 GRAIN ROUND NOSE #3015**

CARTRIDGE OVERALL LENGTH 2.490"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
H322	30.9 gr.	32.1 gr.	33.2 gr.	34.4 gr.	
IMR 3031	31.1 gr.	32.2 gr.	33.3 gr.	34.4 gr.	35.5 gr.
N201	31.4 gr.	32.8 gr.	34.1 gr.	35.5 gr.	36.9 gr.
BL-C2	32.7 gr.	33.8 gr.	35.0 gr.	36.1 gr.	37.3 gr.
IMR 4064	33.0 gr.	34.1 gr.	35.2 gr.	36.4 gr.	
N202	33.5 gr.	34.9 gr.	36.2 gr.	37.6 gr.	39.0 gr.
IMR 4320	33.8 gr.	35.1 gr.	36.3 gr.	37.5 gr.	38.8 gr.

*Indicates maximum load • use with caution*

**30 CALIBER (.308" Dia.)**  
**150 GRAIN ROUND NOSE #3035**

CARTRIDGE OVERALL LENGTH 2.550"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	28.7 gr.	30.0 gr.	31.2 gr.	32.5 gr.	
H322	28.8 gr.	30.2 gr.	31.7 gr.		
N201	29.6 gr.	31.0 gr.	32.4 gr.	33.8 gr.	35.2 gr.
BL-C2	30.0 gr.	31.6 gr.	33.2 gr.	34.8 gr.	
IMR 4064	31.1 gr.	32.5 gr.	33.8 gr.	35.2 gr.	
IMR 4320	31.0 gr.	32.6 gr.	34.1 gr.	35.7 gr.	
N202	32.3 gr.	33.7 gr.	35.1 gr.	36.5 gr.	
WIN 748	32.1 gr.	34.2 gr.	36.4 gr.		

**30-30 WINCHESTER**

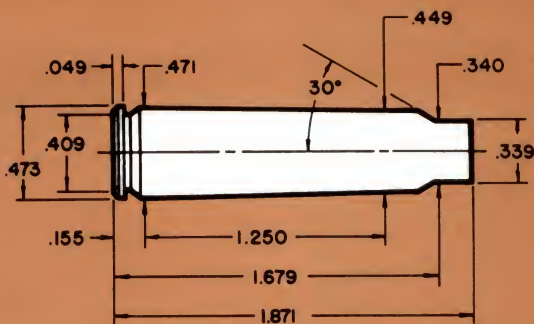
**30 CALIBER (.308" Dia.)**  
**170 GRAIN FLAT POINT #3060**

CARTRIDGE OVERALL LENGTH 2.530"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
IMR 3031	26.4 gr.	27.7 gr.	29.0 gr.	30.2 gr.	31.5 gr.	
H322	26.1 gr.	27.6 gr.	29.1 gr.	30.6 gr.		
N201	27.1 gr.	28.5 gr.	30.0 gr.	31.5 gr.	32.9 gr.	
BL-C2			30.9 gr.	32.3 gr.	33.8 gr.	
N202	28.2 gr.	29.6 gr.	31.1 gr.	32.5 gr.	33.9 gr.	
IMR 4064	28.6 gr.	30.0 gr.	31.3 gr.	32.6 gr.	34.0 gr.	
IMR 4320			31.6 gr.	33.1 gr.	34.5 gr.	
WIN 748		31.5 gr.	33.3 gr.	35.2 gr.		

*Indicates maximum load • use with caution*



## 300 SAVAGE

**RIFLE: SAVAGE MODEL 99**

**BARREL: 24", 1 in 12" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

The 300 Savage offers hunting performance much superior to that of the 30-30 Winchester, and though it never achieved the 30-30's popularity it has been a widely used big game cartridge, ample for all but the largest North American species. The rifle in which it was introduced in 1921 — the Model 99 Savage lever action — has been the most popular of all the rifles chambered for it.

The 300 Savage was first loaded to equal the power of original military 30-06 loadings with the 150 grain bullets. Lever actions and the capacity of the case have kept it from equaling the handloading potential of the 30-06 or the more recent 308 Winchester cartridge. The 308, indeed, has superseded the 300 Savage because of its greater power and today is generally chambered in place of the Savage Arms Company development.

A very wide selection of 30 caliber Hornady Bullets may be handloaded in the 300 Savage case, with 150 and 165 grain weights among the most popular. (Unlike lever actions with tubular magazines, the Model 99 Savage has a rotary magazine which will accommodate the ballistically more efficient Spire Points in these weights.) 4064 is an outstanding powder for loading nearly all bullet weights, with 3031 and 4895 nearly equaling its versatility.



# 30 CALIBER (.308" Dia.)

## 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 2.450"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H 4198 gr.	31.3 gr.	32.8 gr.	34.4 gr.	35.9 gr.	37.4 gr.	
IMR 3031	36.6 gr.	37.9 gr.	39.1 gr.	40.4 gr.	41.7 gr.	43.0 gr.
BL-C2	38.8 gr.	40.4 gr.	41.9 gr.	43.5 gr.		
H4895	39.7 gr.	41.0 gr.	42.3 gr.	43.6 gr.	44.9 gr.	
IMR 4064	39.8 gr.	41.1 gr.	42.4 gr.	43.7 gr.		
IMR 4320	40.3 gr.	41.7 gr.	43.1 gr.	44.6 gr.	46.0 gr.	47.4 gr.
H380	42.6 gr.	44.3 gr.	46.1 gr.			

\*These data may also be used with the 30 cal. 110 gr. Round Nose and 110 gr. FMJ, though overall length may vary.

300 SAVAGE

# 30 CALIBER (.308" Dia.)

## 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 2.520"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H4198	31.7 gr.	33.0 gr.	34.4 gr.	35.7 gr.	37.1 gr.	
IMR 3031	36.2 gr.	37.6 gr.	38.9 gr.	40.3 gr.	41.7 gr.	43.0 gr.
H4895	38.0 gr.	39.6 gr.	41.1 gr.	42.6 gr.	44.1 gr.	
BL-C2	37.6 gr.	39.4 gr.	41.2 gr.	43.0 gr.		
IMR 4064	38.4 gr.	40.0 gr.	41.5 gr.	43.1 gr.	44.7 gr.	
IMR 4320	39.3 gr.	41.0 gr.	42.7 gr.	44.5 gr.	46.2 gr.	
H380	41.5 gr.	43.4 gr.	45.3 gr.	47.2 gr.		

Indicates maximum load • use with caution

30 CALIBER (.308" Dia.)  
150 GRAIN SPIRE POINT #3031



CARTRIDGE OVERALL LENGTH 2.680"

POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	34.1 gr.	35.7 gr.	37.2 gr.	38.7 gr.	40.2 gr.	
BL-C2	33.8 gr.	35.9 gr.	38.0 gr.	40.1 gr.		
H4895	36.1 gr.	37.7 gr.	39.3 gr.	40.9 gr.		
IMR 4064	36.5 gr.	38.0 gr.	39.5 gr.	41.0 gr.	42.5 gr.	44.0 gr.
IMR 4320	36.5 gr.	38.3 gr.	40.2 gr.	42.0 gr.		
H380	39.1 gr.	41.0 gr.	42.8 gr.	44.7 gr.		
IMR 4350	43.0 gr.	44.6 gr.				

\*These data may also be used with the 30 cal. 150 gr. Round Nose, though overall length may vary.

30 CALIBER (.308" Dia.)  
165 GRAIN SPIRE POINT #3040



CARTRIDGE OVERALL LENGTH 2.600"

POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	31.5 gr.	33.1 gr.	34.7 gr.	36.3 gr.	37.8 gr.	39.4 gr.
BL-C2		32.4 gr.	34.9 gr.	37.5 gr.		
H4895	33.8 gr.	35.3 gr.	36.8 gr.	38.3 gr.	39.8 gr.	41.3 gr.
IMR 4064	33.9 gr.	35.4 gr.	36.9 gr.	38.4 gr.	39.9 gr.	41.4 gr.
IMR 4320	34.4 gr.	36.0 gr.	37.7 gr.	39.2 gr.	40.8 gr.	42.4 gr.
H380	34.6 gr.	36.8 gr.	39.0 gr.	41.2 gr.	43.4 gr.	
IMR 4350	39.9 gr.	41.5 gr.	43.1 gr.	44.7 gr.		

\*These data may also be used with the 30 cal. 165 gr. BTSP.

Indicates maximum load • use with caution

# 30 CALIBER (.308" Dia.) 170 GRAIN FLAT POINT #3060



CARTRIDGE OVERALL LENGTH 2.420"

POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	30.0 gr.	31.7 gr.	33.3 gr.	35.0 gr.	36.6 gr.	38.3 gr.
H4895	32.2 gr.	33.9 gr.	35.5 gr.	37.2 gr.	38.8 gr.	40.4 gr.
IMR 4064	33.1 gr.	34.6 gr.	36.1 gr.	37.6 gr.	39.1 gr.	40.6 gr.
BL-C2		35.1 gr.	36.5 gr.	37.9 gr.	39.3 gr.	
IMR 4320	33.2 gr.	34.9 gr.	36.7 gr.	38.5 gr.	40.2 gr.	42.0 gr.
H380	33.8 gr.	36.3 gr.	38.8 gr.	41.2 gr.	43.7 gr.	
IMR 4350	40.2 gr.	41.5 gr.	42.9 gr.	44.2 gr.		

300 SAVAGE

# 30 CALIBER (.308" Dia.) 180 GRAIN SPIRE POINT #3070

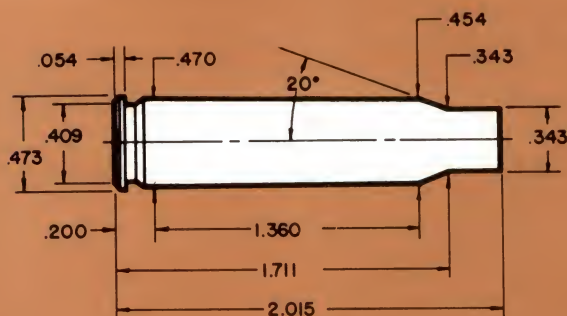


CARTRIDGE OVERALL LENGTH 2.600"

POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	28.3 gr.	30.1 gr.	31.9 gr.	33.7 gr.	35.5 gr.	37.3 gr.
H4895	30.2 gr.	32.1 gr.	34.0 gr.	35.9 gr.	37.8 gr.	39.7 gr.
IMR 4064	30.3 gr.	32.2 gr.	34.1 gr.	36.0 gr.	37.9 gr.	39.8 gr.
BL-C2			34.8 gr.	36.5 gr.	38.3 gr.	
IMR 4320	31.4 gr.	33.1 gr.	34.9 gr.	36.7 gr.	38.4 gr.	40.2 gr.
H380	32.3 gr.	34.5 gr.	36.7 gr.	38.9 gr.	41.1 gr.	
IMR 4350	36.9 gr.	38.6 gr.	40.3 gr.	42.0 gr.	43.7 gr.	45.4 gr.

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

Indicates maximum load • use with caution



## 308 WINCHESTER

**RIFLE: WINCHESTER 70**

**BARREL: 22", 1 in 12" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 210**

Versatile, efficient, and popular is the easiest and best way to describe the 308 Winchester. The 308 has been chambered in every feasible action and provides exceptional performance for everything from bench rest shooting to big game.

The 308 was originally designated the 7.62mm NATO. It was developed as the standard small arms service cartridge for nations that were members of the North Atlantic Treaty Organization.

In the beginning, the 308 did not have the sporting appeal of the 30-06 — it was a known fact that everything the 308 could do, the 30-06 could do a little better. However, when the sporting public realized the accuracy inherent to the cartridge and the numerous medium actions in which it could be chambered, the popularity steadily grew. The 308 is also the most popular national match course cartridge in use today, and with the wide range of Hornady 30 caliber bullets, it makes an excellent all around North American big game cartridge.

The 308, as a rule, is not finicky as to the type of powder that works well in it — another reason for its popularity. In our test rifle, all powders listed, gave more than acceptable results, with N202, IMR 4064, and Winchester 748 providing the best results throughout the range of bullets.

For most powders the data for the 190 grain Boat Tail Hollow Point shows a greater maximum powder charge than for the 180 grain Spire Point. The reason for this phenomenon is related to the construction of the two bullets. The 180 grain Spire Point has a longer bearing surface and consequently reaches maximum pressures sooner.



# 30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 2.690"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
RL-7	38.5 gr.	40.1 gr.	41.8 gr.		
H-322	42.8 gr.	44.3 gr.	45.8 gr.	47.2 gr.	
IMR 3031	43.2 gr.	44.6 gr.	46.0 gr.		
IMR 4895	44.1 gr.	45.4 gr.	46.7 gr.	48.0 gr.	
N201	44.3 gr.	45.8 gr.	47.3 gr.	48.8 gr.	50.4 gr.
IMR 4064	45.4 gr.	47.1 gr.	48.8 gr.		
N202	47.2 gr.	48.6 gr.	49.9 gr.	51.3 gr.	52.6 gr.
WIN 748	49.9 gr.	51.6 gr.	53.2 gr.		

These data may also be used with the 30 cal. 110 gr. RN and 110 gr. FMJ bullets, though overall length may vary.

308 WINCHESTER

# 30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 2.690"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
RL-7	36.8 gr.	38.4 gr.			
H-322	39.8 gr.	41.8 gr.	43.8 gr.		
IMR 3031	40.4 gr.	42.2 gr.	43.9 gr.		
IMR 4895	40.8 gr.	42.6 gr.	44.4 gr.	46.2 gr.	
N201	41.0 gr.	42.7 gr.	44.5 gr.	46.2 gr.	
IMR 4064	42.7 gr.	44.2 gr.	45.7 gr.	47.3 gr.	
N202	43.7 gr.	45.1 gr.	46.5 gr.	48.0 gr.	
WIN 748	45.5 gr.	47.6 gr.	49.7 gr.	51.7 gr.	53.8 gr.
N204	50.4 gr.	52.2 gr.	54.0 gr.		

Indicates maximum load • use with caution

## 30 CALIBER (.308" Dia.) 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 2.750"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
RL-7	32.2 gr.	34.1 gr.	36.0 gr.		
IMR 3031	36.3 gr.	37.9 gr.	39.6 gr.	41.2 gr.	
H322	36.6 gr.	38.2 gr.	39.8 gr.	41.4 gr.	
N201	37.7 gr.	39.1 gr.	40.6 gr.	42.0 gr.	43.4 gr.
IMR 4895	38.5 gr.	39.9 gr.	41.3 gr.	42.7 gr.	
IMR 4064	39.7 gr.	41.0 gr.	42.3 gr.	43.6 gr.	44.9 gr.
N202	39.6 gr.	41.3 gr.	43.0 gr.	44.7 gr.	46.4 gr.
WIN 748	41.8 gr.	43.4 gr.	45.1 gr.	46.7 gr.	48.4 gr.
N204	45.9 gr.	47.4 gr.	49.0 gr.	50.5 gr.	

These data may also be used with the 30 cal. 150 gr. RN and 150 gr. FMJ bullets, though overall length may vary.

## 30 CALIBER (.308" Dia.) 165 GRAIN SPIRE POINT #3040

CARTRIDGE OVERALL LENGTH 2.750"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H322	35.5 gr.	37.1 gr.	38.6 gr.		
IMR 4895	36.1 gr.	37.5 gr.	39.0 gr.	40.4 gr.	
IMR 3031	36.1 gr.	37.6 gr.	39.1 gr.	40.6 gr.	
N201	37.1 gr.	38.5 gr.	40.0 gr.	41.4 gr.	
IMR 4064	38.5 gr.	39.8 gr.	41.0 gr.	42.3 gr.	43.5 gr.
N202	39.1 gr.	40.5 gr.	41.8 gr.	43.2 gr.	
WIN 748	39.8 gr.	41.3 gr.	42.8 gr.	44.3 gr.	45.8 gr.
N204	44.0 gr.	45.5 gr.	47.1 gr.	48.7 gr.	
WIN 760	43.8 gr.	45.9 gr.	48.1 gr.	50.3 gr.	

These data may also be used with the 30 cal. 165 gr. BTSP bullet.



*Indicates maximum load • use with caution*

## 30 CALIBER (.308" Dia.)

168 GRAIN BOAT TAIL  
HOLLOW POINT #3050

CARTRIDGE OVERALL LENGTH 2.800"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H322	35.8 gr.	37.2 gr.	38.6 gr.		
IMR 3031	36.1 gr.	37.5 gr.	38.8 gr.	40.2 gr.	
IMR 4895	36.7 gr.	38.1 gr.	39.5 gr.		
N201	36.5 gr.	38.0 gr.	39.5 gr.	41.0 gr.	42.5 gr.
IMR 4064	38.1 gr.	39.5 gr.	40.8 gr.	42.2 gr.	
N202	38.4 gr.	40.0 gr.	41.6 gr.	43.2 gr.	
WIN 748	40.2 gr.	41.6 gr.	43.0 gr.	44.4 gr.	45.8 gr.
N204	43.3 gr.	44.9 gr.	46.4 gr.	48.0 gr.	
WIN 760	43.3 gr.	45.1 gr.	46.8 gr.	48.5 gr.	50.3 gr.

308 WINCHESTER

## 30 CALIBER (.308" Dia.)

## 180 GRAIN SPIRE POINT #3070

CARTRIDGE OVERALL LENGTH 2.765"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 4895	35.0 gr.	36.2 gr.	37.5 gr.		
IMR 3031	35.3 gr.	36.8 gr.	38.3 gr.	39.8 gr.	
N201	36.2 gr.	37.7 gr.	39.2 gr.	40.6 gr.	
IMR 4064	37.1 gr.	38.6 gr.	40.1 gr.	41.6 gr.	
N202	37.1 gr.	38.8 gr.	40.6 gr.	42.3 gr.	
WIN 748	38.4 gr.	39.9 gr.	41.4 gr.	42.8 gr.	
WIN 760	42.0 gr.	43.6 gr.	45.2 gr.	46.8 gr.	48.4 gr.
N204	42.4 gr.	44.1 gr.	45.7 gr.	47.4 gr.	

These data may also be used with the 30 cal. 180 gr. RN bullet, though overall length may vary.

indicates maximum load • use with caution

**30 CALIBER (.308" Dia.)**  
**190 GRAIN BOAT TAIL**  
**HOLLOW POINT #3080**



**CARTRIDGE OVERALL LENGTH 2.900"**

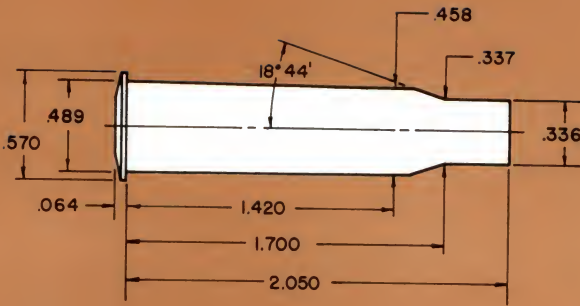
POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	35.7 gr.	37.0 gr.	38.4 gr.		
N201	35.8 gr.	37.5 gr.	39.1 gr.	40.7 gr.	
IMR 4064	36.6 gr.	38.3 gr.	40.0 gr.	41.7 gr.	
N202	37.8 gr.	39.4 gr.	41.0 gr.	42.6 gr.	
WIN 748	40.1 gr.	41.3 gr.	42.6 gr.	43.8 gr.	
N204	42.5 gr.	43.9 gr.	45.3 gr.	46.8 gr.	
WIN 760	42.5 gr.	44.3 gr.	46.0 gr.	47.8 gr.	49.5 gr.

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.



*Indicates maximum load • use with caution*





## 7.62mm RUSSIAN

**RIFLE: WESTINGHOUSE**

**BARREL: 31½", 1 in 10" TWIST**

**CASE: NORMA**

**PRIMER: FEDERAL 210**

The 7.62 Russian (or 7.62 x 54R) is a rimmed bottlenecked 30 caliber cartridge adopted as the service round of the Czar's Russian army in 1891, maintained as the standard service cartridge by both Czarist and Soviet armies through two world wars, and (with the Model 91 Mosin-Nagant rifles chambered for it) supplied in quantity to member nations of the Communist bloc. During World War I, Remington, Winchester, and New England Westinghouse all produced Mosin-Nagant Model 91's for the Russians. After the Soviet Revolution many of these U.S. manufactured weapons stayed in this country and were sold to the American shooting public. Other Nagant rifles entered the U.S. as captured war surplus following Korea. Remington produced sporting ammunition for the 7.62 Russian until about 1950; Boxer primed cartridge brass and sporting loads today are available from Norma.

The 7.62mm Russian is a cartridge of more than historical interest. Soviet marksmen in international shooting competition have scored some remarkable successes with this cartridge, and big bore competitors from other nations have begun to take interest in the 7.62. For the target shooting fraternity we have therefore included loads for our 168 and 190 grain Boat Tail Hollow Point Match bullets.

### 30 CALIBER (.308" Dia.)

#### 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 2.715"



VELOCITY						
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031		42.0 gr.	44.0 gr.	46.0 gr.	48.0 gr.	
H4895		45.2 gr.	47.3 gr.	49.5 gr.	51.7 gr.	
H380	44.0 gr.	46.2 gr.	48.3 gr.	50.4 gr.	52.5 gr.	
IMR 4320		46.4 gr.	48.4 gr.	50.5 gr.	52.5 gr.	
IMR 4064		47.0 gr.	48.5 gr.	50.0 gr.		
WIN 760	52.0 gr.	53.7 gr.	55.3 gr.	57.0 gr.		

\*These data may also be used with the 30 cal. 110 gr. Round Nose and 110 gr. FMJ, though overall length may vary.

### 30 CALIBER (.308" Dia.)

#### 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 2.815"



VELOCITY					
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	41.0 gr.	43.1 gr.	45.2 gr.	48.3 gr.	49.4 gr.
H4895	45.0 gr.	46.8 gr.	48.5 gr.	50.3 gr.	
IMR 4064	45.4 gr.	47.1 gr.	48.7 gr.	50.3 gr.	
H380	45.3 gr.	47.3 gr.	49.2 gr.	51.2 gr.	
IMR 4320	45.0 gr.	47.2 gr.	49.3 gr.	51.5 gr.	53.7 gr.
WIN 760	52.5 gr.	54.2 gr.	56.0 gr.		

### 30 CALIBER (.308" Dia.)

#### 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 2.825"



VELOCITY						
POWDER	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	38.2 gr.	40.3 gr.	42.3 gr.	44.4 gr.		
H4895	41.3 gr.	43.3 gr.	45.2 gr.	47.2 gr.	49.2 gr.	
IMR 4064	42.5 gr.	44.1 gr.	45.8 gr.	47.4 gr.	49.1 gr.	
IMR 4320	42.7 gr.	44.6 gr.	46.5 gr.	48.4 gr.	50.2 gr.	
H380		44.0 gr.	46.3 gr.	48.6 gr.	51.9 gr.	53.2 gr.
WIN 760	49.0 gr.	50.7 gr.	52.4 gr.	54.1 gr.	55.9 gr.	

\*These data may also be used with the 30 cal. 150 gr. Round Nose and 150 gr. FMJ, though overall length may vary.



*Indicates maximum load • use with caution*

## 30 CALIBER (.308" Dia.)

### 165 GRAIN SPIRE POINT #3040

CARTRIDGE OVERALL LENGTH 2.810"



VELOCITY					
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	36.7 gr.	38.9 gr.	41.1 gr.	43.3 gr.	
H4895	39.9 gr.	42.0 gr.	44.1 gr.	46.2 gr.	48.3 gr.
IMR 4064	41.6 gr.	43.0 gr.	44.4 gr.	45.8 gr.	
IMR 4320	41.4 gr.	43.3 gr.	45.1 gr.	47.0 gr.	48.8 gr.
H380	41.5 gr.	43.5 gr.	45.6 gr.	47.6 gr.	49.6 gr.
WIN 760	47.2 gr.	49.0 gr.	50.7 gr.	52.5 gr.	54.2 gr.

\*These data may also be used with the 30 cal. 165 gr. BTSP.

## 30 CALIBER (.308" Dia.)

### 168 GRAIN BOAT TAIL HOLLOW POINT #3050

CARTRIDGE OVERALL LENGTH 2.975"



VELOCITY					
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	38.3 gr.	40.5 gr.	42.7 gr.	45.9 gr.	
H4895	41.0 gr.	43.3 gr.	45.5 gr.	47.8 gr.	
IMR 4064	41.4 gr.	43.4 gr.	45.5 gr.	47.5 gr.	
IMR 4320	42.0 gr.	43.8 gr.	45.6 gr.	47.5 gr.	
H380	41.6 gr.	43.6 gr.	45.7 gr.	47.8 gr.	49.8 gr.
WIN 760	47.7 gr.	49.4 gr.	51.1 gr.	52.8 gr.	54.5 gr.

## 30 CALIBER (.308" Dia.)

### 180 GRAIN SPIRE POINT #3070

CARTRIDGE OVERALL LENGTH 3.010"



VELOCITY					
POWDER	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	38.6 gr.	40.7 gr.	42.7 gr.	44.8 gr.	
H4895	40.8 gr.	42.8 gr.	44.9 gr.	47.0 gr.	
IMR 4064	41.5 gr.	43.5 gr.	45.4 gr.	47.3 gr.	
IMR 4320	41.4 gr.	43.6 gr.	45.7 gr.	47.8 gr.	50.0 gr.
H380	42.0 gr.	44.2 gr.	46.8 gr.	49.1 gr.	51.5 gr.
IMR 4350	47.2 gr.	49.3 gr.	51.5 gr.		
WIN 760	48.3 gr.	50.1 gr.	51.9 gr.	53.7 gr.	55.5 gr.
N204	50.2 gr.	51.9 gr.	53.5 gr.	55.1 gr.	

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

*Indicates maximum load • use with caution*



### 30 CALIBER (.308" Dia.)

#### 190 GRAIN BOAT TAIL HOLLOW POINT #3080



CARTRIDGE OVERALL LENGTH 3.105"

POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	37.5 gr.	39.4 gr.	41.4 gr.	43.3 gr.	
IMR 4064	38.5 gr.	40.5 gr.	42.5 gr.	44.5 gr.	
H380	38.6 gr.	40.8 gr.	43.0 gr.	45.2 gr.	47.4 gr.
IMR 4320	39.2 gr.	41.3 gr.	43.5 gr.	45.6 gr.	47.7 gr.
WIN 760	44.7 gr.	46.4 gr.	48.1 gr.	49.8 gr.	51.5 gr.
IMR 4350	44.0 gr.	46.4 gr.	48.8 gr.	51.2 gr.	
N204	46.7 gr.	48.3 gr.	50.2 gr.	51.8 gr.	53.5 gr.

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.

### 30 CALIBER (.308" Dia.)

#### 220 GRAIN ROUND NOSE #3090



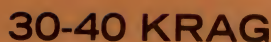
CARTRIDGE OVERALL LENGTH 3.055"

POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
H4895	37.7 gr.	39.7 gr.	41.7 gr.	43.7 gr.	
IMR 4064	37.9 gr.	40.2 gr.	42.5 gr.	44.8 gr.	
IMR 4320	38.6 gr.	40.8 gr.	43.0 gr.	45.2 gr.	
H380		41.7 gr.	44.0 gr.	46.3 gr.	48.6 gr.
WIN 760		46.4 gr.	48.2 gr.	50.0 gr.	51.9 gr.
N204	46.5 gr.	48.1 gr.	49.7 gr.	51.3 gr.	52.9 gr.

\*These data may also be used with the 30 cal. 220 gr. FMJ.

*Indicates maximum load • use with caution*





## PRIMER: FEDERAL 210

Many later military and commercial developments have displaced the 30-40 from its former position of popularity, but it is still a commonly used cartridge.

# 30 CALIBER (.308" Dia.)

## 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 2.880"



VELOCITY						
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	37.6 gr.	38.7 gr.	39.9 gr.	41.0 gr.	42.1 gr.	43.2 gr.
IMR 4320		41.3 gr.	42.9 gr.	44.5 gr.	46.0 gr.	47.7 gr.
IMR 4064	41.4 gr.	42.7 gr.	43.9 gr.	45.2 gr.	46.5 gr.	47.8 gr.
H4895	40.4 gr.	42.1 gr.	43.7 gr.	45.4 gr.	47.1 gr.	48.7 gr.
H380	40.5 gr.	42.3 gr.	44.1 gr.	45.9 gr.	47.7 gr.	
IMR 4350	48.1 gr.	49.5 gr.	50.8 gr.			

\*These data may also be used with the 30 cal. 110 gr. Round Nose, though overall length may vary.

# 30 CALIBER (.308" Dia.)

## 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 2.975"



VELOCITY						
POWDER	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031			37.9 gr.	39.5 gr.	41.1 gr.	42.7 gr.
IMR 4064	38.7 gr.	40.2 gr.	41.6 gr.	43.0 gr.	44.5 gr.	45.9 gr.
H4895	38.2 gr.	39.9 gr.	41.5 gr.	43.2 gr.	44.8 gr.	46.5 gr.
IMR 4320	38.1 gr.	39.9 gr.	41.6 gr.	43.4 gr.	45.2 gr.	46.9 gr.
H380		41.0 gr.	43.0 gr.	44.9 gr.	46.8 gr.	
IMR 4350	45.8 gr.	47.3 gr.	48.8 gr.	50.4 gr.		

# 30 CALIBER (.308" Dia.)

## 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 3.135"



VELOCITY						
POWDER	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	34.0 gr.	35.2 gr.	36.4 gr.	37.7 gr.	38.9 gr.	40.1 gr.
H4895		37.4 gr.	39.1 gr.	40.8 gr.	42.4 gr.	44.1 gr.
IMR 4064		37.8 gr.	39.5 gr.	41.2 gr.	42.9 gr.	44.5 gr.
IMR 4320	36.3 gr.	38.0 gr.	39.6 gr.	41.3 gr.	43.0 gr.	44.7 gr.
H380	38.0 gr.	39.7 gr.	41.3 gr.	43.0 gr.	44.6 gr.	
IMR 4350	41.7 gr.	43.4 gr.	45.1 gr.	46.8 gr.	48.5 gr.	50.2 gr.

\*These data may also be used with the 30 cal. 150 gr. Round Nose, and 150 gr. FMJ, though overall length may vary.

*Indicates maximum load • use with caution*

### 30 CALIBER (.308" Dia.) 165 GRAIN SPIRE POINT #3040

CARTRIDGE OVERALL LENGTH 3.105"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	31.6 gr.	32.9 gr.	34.3 gr.	35.7 gr.	37.0 gr.	38.4 gr.
IMR 4320				38.5 gr.	40.2 gr.	41.9 gr.
H4895	33.5 gr.	35.2 gr.	36.9 gr.	38.7 gr.	40.4 gr.	
IMR 4064	34.3 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.5 gr.	42.0 gr.
H380			38.0 gr.	39.8 gr.	41.6 gr.	43.4 gr.
IMR 4350	39.8 gr.	41.3 gr.	42.8 gr.	44.3 gr.	45.8 gr.	47.3 gr.
H4831			44.8 gr.	47.0 gr.	49.1 gr.	

\*These data may also be used with the 30 cal. 165 gr. BTSP.

### 30 CALIBER (.308" Dia.) 180 GRAIN SPIRE POINT #3070

CARTRIDGE OVERALL LENGTH 3.175"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	30.6 gr.	32.1 gr.	33.6 gr.	35.0 gr.	36.5 gr.	38.0 gr.
H4895	31.8 gr.	33.5 gr.	35.1 gr.	36.7 gr.	38.3 gr.	40.0 gr.
IMR 4320		33.6 gr.	35.2 gr.	36.9 gr.	38.6 gr.	40.3 gr.
IMR 4064	32.6 gr.	34.2 gr.	35.8 gr.	37.4 gr.	38.9 gr.	40.5 gr.
H380	34.9 gr.	36.3 gr.	37.6 gr.	39.0 gr.	40.4 gr.	
IMR 4350	38.9 gr.	40.1 gr.	41.3 gr.	42.6 gr.	43.8 gr.	45.1 gr.
H4831	41.5 gr.	42.9 gr.	44.2 gr.	45.6 gr.	47.0 gr.	

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

### 30 CALIBER (.308" Dia.) 220 GRAIN ROUND NOSE #3090

CARTRIDGE OVERALL LENGTH 3.080"

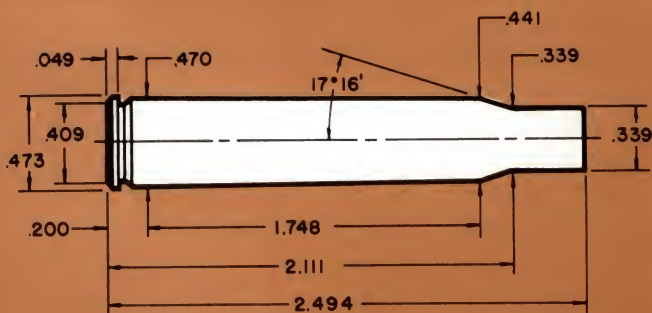


POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
IMR 3031	27.5 gr.	29.2 gr.	31.0 gr.	32.7 gr.		
IMR 4320	29.7 gr.	31.2 gr.	32.7 gr.	34.1 gr.	35.6 gr.	
IMR 4064	29.3 gr.	31.0 gr.	32.7 gr.	34.4 gr.	36.0 gr.	
H4895	30.0 gr.	31.5 gr.	33.1 gr.	34.7 gr.	36.3 gr.	
H380	31.4 gr.	32.9 gr.	34.4 gr.	36.0 gr.		
IMR 4350	34.5 gr.	36.0 gr.	37.5 gr.	39.0 gr.	40.5 gr.	42.0 gr.
H4831	37.0 gr.	38.4 gr.	39.8 gr.	41.1 gr.	42.5 gr.	43.9 gr.

\*These data may also be used with the 30 cal. 220 gr. FMJ.

Indicates maximum load • use with caution





## 30-06

**RIFLE: WINCHESTER MODEL 70****BARREL: 22", 1 in 10" TWIST****CASE: FRONTIER****PRIMER: FEDERAL 210**

The initial development date of the 30-06 was 1903, but the standard dimensions as we know them today were introduced in 1906. This military round was designated the "ball cartridge, caliber .30, Model of 1906," hence the title 30-06. After two World Wars and Korea, the 30-06 was destined to become the most popular centerfire cartridge ever introduced in America.

Because of the extremely wide range of bullet weights available for this round, the versatility of the 30-06 is unmatched; it provides adequate power for all North American game with tolerable recoil.

Not all powders listed gave optimum results throughout the range of bullets, mainly because the weights vary by such a large amount (110 grain — 220 grain). The 30-06 has the largest variety of suitable powders of all the cartridges listed in the Hornady Manual, which illustrates the efficiency of the cartridge. Best results in our rifle were obtained using IMR 4064 and IMR 4831. N202, IMR 4350, Winchester 785, and Norma MRP also gave very good results, and no powders listed gave less than acceptable results.



# 30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 3.170"



POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	50.2 gr.	51.8 gr.	53.4 gr.	55.0 gr.	
H4895	50.2 gr.	52.0 gr.	53.7 gr.	55.5 gr.	
N201	52.1 gr.	53.6 gr.	55.1 gr.		
IMR 4320	51.2 gr.	53.7 gr.	56.2 gr.		
IMR 4064	53.0 gr.	54.6 gr.	56.2 gr.	57.8 gr.	
N202	53.9 gr.	55.7 gr.	57.4 gr.	59.1 gr.	60.8 gr.
WIN 748	55.0 gr.	56.7 gr.	58.5 gr.	60.2 gr.	62.0 gr.
H205	61.4 gr.	62.9 gr.	64.5 gr.		
WIN 760	60.3 gr.	62.5 gr.	64.6 gr.		

# 30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 3.170"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	46.8 gr.	48.4 gr.	50.0 gr.	51.6 gr.	
H4895	47.2 gr.	49.1 gr.	50.9 gr.		
N201	48.7 gr.	50.7 gr.	52.6 gr.		
IMR 4320	49.7 gr.	51.4 gr.	53.1 gr.		
IMR 4064	50.6 gr.	52.0 gr.	53.5 gr.	54.9 gr.	
N202	49.9 gr.	51.8 gr.	53.7 gr.	55.6 gr.	
WIN 748	51.3 gr.	53.1 gr.	54.9 gr.	56.8 gr.	58.6 gr.
IMR 4350	56.2 gr.	58.2 gr.	60.1 gr.		
H205	57.5 gr.	59.1 gr.	60.7 gr.	62.3 gr.	63.9 gr.
WIN 760	55.7 gr.	58.1 gr.	60.6 gr.	63.0 gr.	

Indicates maximum load • use with caution

# **30 CALIBER (.308" Dia.)** **150 GRAIN SPIRE POINT #3031**

CARTRIDGE OVERALL LENGTH 3.230"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 3031	44.7 gr.	46.4 gr.	48.1 gr.		
H4895	45.2 gr.	47.3 gr.	49.4 gr.		
N201	46.1 gr.	48.0 gr.	49.9 gr.		
IMR 4320	46.8 gr.	48.3 gr.	49.7 gr.		
IMR 4064	47.5 gr.	49.2 gr.	50.9 gr.	52.6 gr.	
N202	47.4 gr.	49.5 gr.	51.5 gr.	53.6 gr.	
WIN 748	48.6 gr.	50.5 gr.	52.4 gr.	54.3 gr.	56.1 gr.
IMR 4350	53.4 gr.	55.4 gr.	57.4 gr.	59.4 gr.	
WIN 760	52.8 gr.	55.4 gr.	58.0 gr.	60.6 gr.	63.2 gr.
H205	55.0 gr.	56.6 gr.	58.2 gr.	59.8 gr.	61.5 gr.
IMR 4831	56.9 gr.	58.6 gr.	60.3 gr.		
NORMA MRP	59.4 gr.	61.2 gr.	62.9 gr.		
WIN 785	58.5 gr.	61.1 gr.	63.4 gr.		

These data may also be used with the 30 cal. 150 gr. RN and 150 gr. FMJ bullets, though overall length may vary.

# **30 CALIBER (.308" Dia.)** **165 GRAIN BOAT TAIL** **SPIRE POINT #3045**

CARTRIDGE OVERALL LENGTH 3.230"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
N201	45.1 gr.	47.0 gr.	48.9 gr.		
IMR 4064	46.6 gr.	48.3 gr.	49.9 gr.		
N202	46.0 gr.	48.2 gr.	50.4 gr.		
WIN 748	47.2 gr.	49.2 gr.	51.2 gr.	53.3 gr.	
IMR 4350	51.4 gr.	53.4 gr.	55.4 gr.	57.4 gr.	
H205	53.9 gr.	55.3 gr.	56.7 gr.	58.1 gr.	59.5 gr.
WIN 760	51.7 gr.	54.0 gr.	56.3 gr.	58.5 gr.	60.8 gr.
IMR 4831	54.5 gr.	56.4 gr.	58.2 gr.	60.1 gr.	
NORMA MRP	57.4 gr.	59.4 gr.	61.3 gr.	63.2 gr.	
WIN 785	56.6 gr.	59.0 gr.	61.4 gr.	63.8 gr.	

These data may also be used with the 30 cal. 165 gr. SP bullet.

*Indicates maximum load • use with caution*

# 30 CALIBER (.308" Dia.)

## 168 GRAIN BOAT TAIL HOLLOW POINT #3050

CARTRIDGE OVERALL LENGTH 3.280"



30-06

POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4895	42.1 gr.	44.3 gr.	46.5 gr.		
N201	43.8 gr.	45.6 gr.	47.4 gr.		
IMR 4064	44.8 gr.	46.4 gr.	48.0 gr.	49.6 gr.	
N202	44.0 gr.	46.4 gr.	48.9 gr.		
WIN 748	45.5 gr.	47.6 gr.	49.7 gr.	51.8 gr.	53.9 gr.
IMR 4350	50.5 gr.	52.3 gr.	54.1 gr.	55.8 gr.	57.6 gr.
H205	51.8 gr.	53.4 gr.	55.0 gr.	56.6 gr.	58.2 gr.
WIN 760	50.0 gr.	52.1 gr.	54.2 gr.	56.4 gr.	58.5 gr.
IMR 4831	53.4 gr.	55.0 gr.	56.6 gr.	58.1 gr.	59.7 gr.
NORMA MRP	56.5 gr.	58.1 gr.	59.8 gr.	61.5 gr.	63.2 gr.
WIN 785		57.2 gr.	59.4 gr.	61.5 gr.	63.7 gr.

# 30 CALIBER (.308" Dia.)

## 180 GRAIN SPIRE POINT #3070

CARTRIDGE OVERALL LENGTH 3.245"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
N201	42.2 gr.	44.2 gr.	46.1 gr.		
IMR 4064	43.3 gr.	45.1 gr.	46.9 gr.	48.7 gr.	
N202	43.5 gr.	45.6 gr.	47.7 gr.		
WIN 748	44.9 gr.	46.8 gr.	48.6 gr.	50.5 gr.	
IMR 4350	48.8 gr.	50.7 gr.	52.6 gr.	54.5 gr.	56.4 gr.
WIN 760		50.1 gr.	52.4 gr.	54.8 gr.	
H205	49.3 gr.	51.3 gr.	53.3 gr.		
IMR 4831	51.9 gr.	53.7 gr.	55.5 gr.	57.3 gr.	59.2 gr.
NORMA MRP		56.1 gr.	58.2 gr.	60.3 gr.	62.4 gr.
WIN 785		55.3 gr.	58.2 gr.	61.1 gr.	63.9 gr.

These data may also be used with the 30 cal. 180 gr. RN bullet, though overall length may vary.

Indicates maximum load • use with caution



# 30 CALIBER (.308" Dia.) 190 GRAIN BOAT TAIL HOLLOW POINT #3080

CARTRIDGE OVERALL LENGTH 3.380"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4064	44.5 gr.	46.2 gr.	47.9 gr.	49.6 gr.	
N202	44.2 gr.	46.7 gr.	49.2 gr.		
WIN 748	45.6 gr.	47.5 gr.	49.3 gr.	51.1 gr.	
IMR 4350	49.3 gr.	51.2 gr.	53.0 gr.	54.8 gr.	56.6 gr.
WIN 760		50.7 gr.	53.0 gr.	55.3 gr.	57.5 gr.
H205	49.7 gr.	51.8 gr.	53.9 gr.	56.0 gr.	
IMR 4831	51.6 gr.	53.5 gr.	55.5 gr.	57.5 gr.	59.4 gr.
NORMA MRP		56.5 gr.	58.3 gr.	60.2 gr.	62.0 gr.
WIN 785		55.5 gr.	57.7 gr.	60.0 gr.	62.2 gr.

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.

# 30 CALIBER (.308" Dia.) 220 GRAIN ROUND NOSE #3090

CARTRIDGE OVERALL LENGTH 3.230"

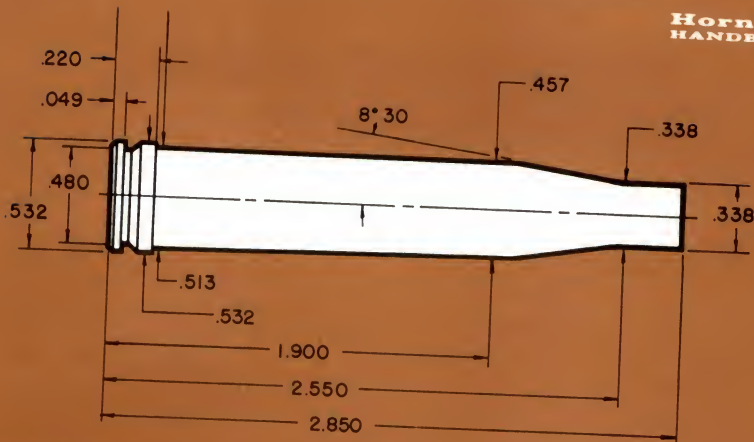


POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
N202	41.4 gr.	43.8 gr.	46.2 gr.		
WIN 748	42.6 gr.	44.7 gr.	46.7 gr.		
WIN 760	45.6 gr.	47.9 gr.	50.2 gr.		
IMR 4350	46.3 gr.	48.3 gr.	50.4 gr.	52.5 gr.	54.6 gr.
H205	47.3 gr.	49.3 gr.	51.3 gr.		
IMR 4831		50.9 gr.	53.1 gr.	55.3 gr.	57.5 gr.
WIN 785		51.6 gr.	54.3 gr.	57.0 gr.	59.7 gr.
NORMA MRP		53.2 gr.	55.4 gr.	57.6 gr.	59.8 gr.

These data may also be used with the 30 cal. 220 gr. FMJ bullet.

 Indicates maximum load • use with caution





## 300 H & H MAGNUM

**RIFLE:** WINCHESTER MODEL 70

**BARREL:** 26", 1 in 10" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 120

Produced as a factory cartridge by the Western Cartridge Company from 1925 on, the 300 H&H was available only in custom American rifles until 1937 when Winchester chambered its Model 70 for the round. Its American fortunes received their biggest boost when the cartridge was used to win the 1000 yard Wimbledon match in 1935. The 300 H&H has put in strong appearances at every National Match since.

Adequate for nearly all game but the largest and meanest species of Africa and Asia, the cartridge was originally designed by the well known London firm of Holland & Holland and introduced following WW I. With its large powder capacity, the 300 H&H will develop significantly higher velocities than the 30-06, and unlike some of the later 30 caliber magnums it will deliver respectable accuracy with bullets lighter than 150 or 130 grain. The very extensive selection of 30 caliber Hornady Bullets permit the reloader to exploit the full potential of the 300 H&H for game, varmint, and target shooting. In this edition of the *Hornady Handbook* we have included extensive data for reloading our 30 caliber 168 and 190 grain Boat Tail Hollow Point Match bullets.

The 300 H&H case has formed the basis of many notable cartridge developments, most important among them the original series of Weatherby magnum cartridges. No American factory rifle is currently chambered for this cartridge.

# **30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT #3010**



**CARTRIDGE OVERALL LENGTH 3.435"**

POWDER	VELOCITY				
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 3031	52.2 gr.	54.7 gr.	57.1 gr.	59.6 gr.	62.0 gr.
H4895	57.0 gr.	59.0 gr.	61.0 gr.	63.0 gr.	65.0 gr.
IMR 4064	58.0 gr.	60.0 gr.	62.0 gr.	64.0 gr.	
IMR 4320	58.6 gr.	60.6 gr.	62.6 gr.	64.6 gr.	66.5 gr.
H380		60.0 gr.	62.5 gr.	65.0 gr.	
IMR 4350		70.3 gr.	72.2 gr.	74.1 gr.	76.0 gr.
WIN 760		70.7 gr.	73.3 gr.	75.9 gr.	78.4 gr.
H4831		73.0 gr.	75.0 gr.	77.0 gr.	79.0 gr.
N204	73.8 gr.	75.6 gr.	77.4 gr.	79.3 gr.	81.1 gr.

# **30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT #3020**



**CARTRIDGE OVERALL LENGTH 3.480"**

POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	53.5 gr.	55.7 gr.	58.0 gr.		
H4895	55.3 gr.	57.5 gr.	59.8 gr.	62.1 gr.	
IMR 4064	57.5 gr.	59.7 gr.	61.9 gr.		
IMR 4320	57.8 gr.	60.0 gr.	62.2 gr.	64.4 gr.	
H380	58.0 gr.	60.5 gr.	63.0 gr.		
IMR 4350	66.0 gr.	68.0 gr.	70.0 gr.	72.0 gr.	74.0 gr.
WIN 760		69.9 gr.	71.6 gr.	73.2 gr.	74.8 gr.
H4831		70.5 gr.	72.6 gr.	74.7 gr.	76.8 gr.
N204	71.0 gr.	73.2 gr.	75.4 gr.	77.6 gr.	79.8 gr.

*Indicates maximum load • use with caution*

# 30 CALIBER (.308" Dia.) 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 3.555"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 3031	52.0 gr.	54.1 gr.	56.2 gr.	58.3 gr.	
H4895	53.0 gr.	55.5 gr.	58.0 gr.	60.6 gr.	
IMR 4064	53.5 gr.	56.1 gr.	58.7 gr.	61.3 gr.	
IMR 4320	54.3 gr.	56.9 gr.	59.5 gr.	62.0 gr.	
H380	55.8 gr.	58.8 gr.	61.8 gr.		
IMR 4350		64.2 gr.	66.6 gr.	69.0 gr.	71.4 gr.
WIN 760	65.1 gr.	67.3 gr.	69.4 gr.	71.6 gr.	73.7 gr.
H4831		67.8 gr.	69.9 gr.	72.0 gr.	74.1 gr.
H450		68.0 gr.	70.8 gr.	73.5 gr.	76.3 gr.
N204	69.0 gr.	71.0 gr.	73.1 gr.	75.1 gr.	77.2 gr.

These data may also be used with the 30 cal. 150 gr. Round Nose and 150 gr. FMJ, though overall length may vary.

# 30 CALIBER (.308" Dia.) 165 GRAIN SPIRE POINT #3040

CARTRIDGE OVERALL LENGTH 3.610"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	52.5 gr.	54.8 gr.			
IMR 4320	54.0 gr.	56.5 gr.	59.1 gr.	61.7 gr.	
H4895	54.7 gr.	57.0 gr.	59.3 gr.	61.5 gr.	
IMR 4064	55.7 gr.	57.9 gr.	60.2 gr.	62.5 gr.	
H380	58.7 gr.	60.8 gr.	62.9 gr.	65.0 gr.	
IMR 4350		64.4 gr.	66.5 gr.	68.7 gr.	70.8 gr.
WIN 760		64.7 gr.	67.2 gr.	69.6 gr.	72.1 gr.
H4831	66.0 gr.	68.0 gr.	70.1 gr.	72.2 gr.	74.2 gr.
H450		67.1 gr.	69.7 gr.	72.3 gr.	74.9 gr.
N204	66.0 gr.	68.3 gr.	70.6 gr.	72.9 gr.	75.2 gr.

\*These data may also be used with the 30 cal. 165 gr. BTSP.

Indicates maximum load • use with caution



**30 CALIBER (.308" Dia.)****168 GRAIN BOAT TAIL HOLLOW POINT #3050**

CARTRIDGE OVERALL LENGTH 3.665"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
H4895	56.0 gr.	58.0 gr.	60.0 gr.	62.0 gr.	
IMR 4064	57.0 gr.	59.0 gr.	61.0 gr.	63.0 gr.	
IMR 4320	56.4 gr.	59.0 gr.	61.5 gr.	64.1 gr.	
H380	57.7 gr.	60.3 gr.	63.0 gr.	65.6 gr.	
IMR 4350	64.0 gr.	65.9 gr.	67.8 gr.	69.7 gr.	
WIN 760	63.0 gr.	65.4 gr.	67.8 gr.	70.3 gr.	
N204	65.5 gr.	67.3 gr.	69.2 gr.	71.0 gr.	72.8 gr.
H4831	68.0 gr.	69.9 gr.	71.8 gr.	73.7 gr.	
H450	67.0 gr.	69.7 gr.	72.3 gr.	75.0 gr.	

**30 CALIBER (.308" Dia.)****180 GRAIN SPIRE POINT #3070**

CARTRIDGE OVERALL LENGTH 3.545"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031	48.8 gr.	51.2 gr.	53.7 gr.		
H4895	51.5 gr.	54.0 gr.	56.5 gr.	59.0 gr.	
IMR 4064	51.8 gr.	54.2 gr.	56.8 gr.	59.2 gr.	
IMR 4320	50.2 gr.	53.3 gr.	56.4 gr.	59.5 gr.	
H380	53.3 gr.	56.0 gr.	58.8 gr.	61.5 gr.	
IMR 4350		60.2 gr.	62.7 gr.	65.2 gr.	67.7 gr.
WIN 760	58.8 gr.	61.3 gr.	63.8 gr.	66.2 gr.	
H4831		62.6 gr.	65.0 gr.	67.4 gr.	69.8 gr.
H450		61.2 gr.	64.3 gr.	67.5 gr.	70.6 gr.
N204	61.7 gr.	64.1 gr.	66.6 gr.	69.1 gr.	71.5 gr.

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

Indicates maximum load • use with caution



## 30 CALIBER (.308" Dia.)

## 190 GRAIN BOAT TAIL HOLLOW POINT #3080

CARTRIDGE OVERALL LENGTH 3.655"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	53.7 gr.	56.1 gr.	58.4 gr.	60.8 gr.	
H4895	54.3 gr.	56.6 gr.	58.9 gr.	61.2 gr.	
IMR 4320	55.4 gr.	57.6 gr.	59.8 gr.	61.9 gr.	64.1 gr.
H380	55.7 gr.	58.2 gr.	60.6 gr.	63.1 gr.	65.6 gr.
IMR 4350	60.4 gr.	62.3 gr.	64.2 gr.	66.1 gr.	68.0 gr.
WIN 760	59.3 gr.	61.6 gr.	63.9 gr.	66.1 gr.	68.4 gr.
N204	61.9 gr.	64.1 gr.	66.3 gr.	68.5 gr.	70.6 gr.
H450		64.6 gr.	67.7 gr.	70.7 gr.	73.7 gr.

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.

300 H &amp; H MAGNUM

## 30 CALIBER (.308" Dia.)

## 220 GRAIN ROUND NOSE #3090

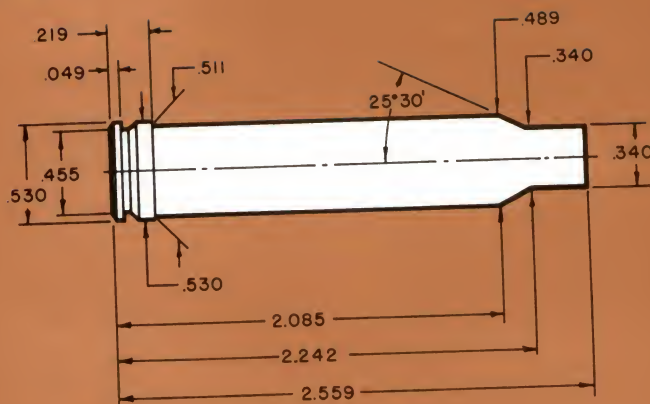
CARTRIDGE OVERALL LENGTH 3.580"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H4895	48.0 gr.	50.7 gr.	53.4 gr.	56.0 gr.	
IMR 4350	54.0 gr.	56.5 gr.	59.0 gr.	61.6 gr.	64.2 gr.
WIN 760	55.9 gr.	58.4 gr.	60.9 gr.	63.5 gr.	
H4831	56.0 gr.	59.0 gr.	62.0 gr.	65.0 gr.	
H450		60.0 gr.	62.5 gr.	65.0 gr.	67.5 gr.
N204	57.0 gr.	59.9 gr.	62.8 gr.	65.8 gr.	68.7 gr.
H870	69.3 gr.	72.0 gr.	74.6 gr.	77.3 gr.	80.0 gr.

\*These data may also be used with the 30 cal. 220 gr. FMJ.

Indicates maximum load • use with caution



## 308 NORMA MAGNUM

RIFLE: '03-A3 CONVERSION  
BARREL: 24", 1 in 10" TWIST  
CASE: NORMA  
PRIMER: winchester 120

The 308 Norma Magnum is a standardized commercial version of many "short magnum" wildcats developed in the 40's and 50's by American experimenters to give performance superior to the 30-06 while requiring only a standard length bolt action. Introduced in America by Sweden's Norma Projectilfabrik which offered unprimed cases and complete chambering specifications, the 308 Norma Magnum quickly caught on in this country as custom gunsmiths brought it into the market. The case is essentially the 358 Norma Magnum, (or 338 Winchester Magnum) necked to 30 caliber, and is very close to the wildcat 30/338.

The 308 Norma is a powerful cartridge which is at its best loaded with slower burning powders (4350, 4831, and H450) and Hornady 165 and 180 grain Spire Points, though the 220 grain Round Nose can be loaded to a potent 2700 fps with the same powders. Shot to shot velocity is considerably more uniform with heavier bullets, i.e. 150 grain and up, than with lighter bullets, and those loads are best which most completely fill the case in loading for a specific velocity. The 308 Norma Magnum is first and foremost a big game cartridge, and has power to spare for nearly all North American hunting.

# 30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 3.200"



POWDER	VELOCITY			
	3500 fps	3600 fps	3700 fps	3800 fps
IMR 3031	63.2 gr.	65.5 gr.	67.6 gr.	
IMR 4064	65.4 gr.	67.5 gr.	69.6 gr.	
H4895	67.7 gr.	70.0 gr.	72.2 gr.	74.4 gr.
IMR 4320	69.2 gr.	71.2 gr.	73.4 gr.	75.4 gr.
H380	69.0 gr.	71.4 gr.	73.6 gr.	
IMR 4350	76.2 gr.	78.8 gr.	81.2 gr.	

308 NORMA MAGNUM

# 30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 3.275"



POWDER	VELOCITY			
	3200 fps	3300 fps	3400 fps	3500 fps
IMR 3031	57.5 gr.	60.0 gr.	62.8 gr.	65.5 gr.
IMR 4064	61.6 gr.	63.6 gr.	65.7 gr.	67.7 gr.
H4895	62.6 gr.	64.8 gr.	67.0 gr.	
IMR 4320	63.4 gr.	65.5 gr.	67.6 gr.	69.6 gr.
H380		67.4 gr.	70.0 gr.	72.4 gr.
IMR 4350	71.6 gr.	73.8 gr.	76.0 gr.	78.2 gr.
N204	73.3 gr.	75.6 gr.	77.9 gr.	80.2 gr.

Indicates maximum load • use with caution



# **30 CALIBER (.308" dia.)** **150 GRAIN SPIRE POINT #3031**

CARTRIDGE OVERALL LENGTH 3.350"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	59.6 gr.	61.6 gr.	63.6 gr.	65.8 gr.	
H4895	60.0 gr.	62.2 gr.	64.4 gr.	66.6 gr.	
IMR 4320	62.0 gr.	64.0 gr.	66.0 gr.	68.0 gr.	
H380	64.0 gr.	66.0 gr.	68.3 gr.	70.4 gr.	
IMR 4350	68.0 gr.	70.0 gr.	72.0 gr.	74.0 gr.	76.0 gr.
WIN 760		71.4 gr.	73.3 gr.	75.1 gr.	
H4831	72.0 gr.	74.1 gr.	76.2 gr.	78.3 gr.	
H450	71.8 gr.	74.0 gr.	76.4 gr.	78.8 gr.	

\*These data may also be used with the 30 cal. 150 gr. Round Nose and 150 gr. FMJ, though overall length may vary.

# **30 CALIBER (.308" Dia.)** **165 GRAIN SPIRE POINT #3040**

CARTRIDGE OVERALL LENGTH 3.325"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4895		55.4 gr.	58.0 gr.	60.5 gr.	63.1 gr.
IMR 4064		56.0 gr.	58.4 gr.	60.8 gr.	
IMR 4320		53.9 gr.	57.4 gr.	61.0 gr.	
H380	57.7 gr.	59.9 gr.	62.0 gr.	64.2 gr.	
IMR 4350	62.7 gr.	64.5 gr.	66.3 gr.	68.0 gr.	69.8 gr.
WIN 760	61.3 gr.	63.8 gr.	66.2 gr.	68.7 gr.	
H4831	66.2 gr.	67.9 gr.	69.7 gr.	71.4 gr.	73.2 gr.
H450	65.5 gr.	67.9 gr.	70.2 gr.	72.5 gr.	74.8 gr.

These loads may also be used with the 30 cal. 165 gr. BTSP.



*Indicates maximum load • use with caution*



## 30 CALIBER (.308" Dia.)

## 168 GRAIN BOAT TAIL HOLLOW POINT #3050

CARTRIDGE OVERALL LENGTH 3.325"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	53.8 gr.	56.1 gr.	58.4 gr.	60.7 gr.	
H4895	54.5 gr.	56.8 gr.	59.1 gr.	61.4 gr.	
IMR 4320	56.1 gr.	58.4 gr.	60.7 gr.	63.0 gr.	
H380	56.2 gr.	59.0 gr.	61.7 gr.	64.4 gr.	
IMR 4350	61.7 gr.	63.5 gr.	65.3 gr.	67.1 gr.	68.9 gr.
WIN 760	60.8 gr.	63.5 gr.	66.3 gr.	69.1 gr.	
H450	66.2 gr.	68.6 gr.	70.9 gr.	73.2 gr.	75.6 gr.
H4831	68.4 gr.	70.2 gr.	71.9 gr.	73.7 gr.	75.5 gr.

308 NORMA MAGNUM

## 30 CALIBER (.308" Dia.)

## 180 GRAIN SPIRE POINT #3070

CARTRIDGE OVERALL LENGTH 3.345"



POWDER	VELOCITY			
	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	58.0 gr.	60.0 gr.	62.5 gr.	
H4895	58.0 gr.	61.0 gr.	63.0 gr.	
IMR 4320	60.8 gr.	62.8 gr.	65.0 gr.	
H380	61.7 gr.	63.8 gr.	66.0 gr.	
WIN 760	64.2 gr.	67.0 gr.	69.8 gr.	
IMR 4350		67.2 gr.	69.4 gr.	71.5 gr.
H4831	69.9 gr.	72.0 gr.	74.0 gr.	76.1 gr.
H450		71.5 gr.	73.5 gr.	75.6 gr.

\*These data may also be used with the 30 cal. 180 gr. Round Nose, though overall length may vary.

 Indicates maximum load • use with caution

# 30 CALIBER (.308" Dia.)

## 190 GRAIN BOAT TAIL HOLLOW POINT #3080

CARTRIDGE OVERALL LENGTH 3.435"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	53.6 gr.	56.2 gr.	58.8 gr.	61.4 gr.	
H4895	54.2 gr.	56.7 gr.	59.1 gr.	61.6 gr.	
IMR 4320	54.9 gr.	57.5 gr.	60.1 gr.	62.6 gr.	
IMR 4350	59.3 gr.	61.5 gr.	63.6 gr.	65.8 gr.	67.9 gr.
WIN 760	60.6 gr.	62.9 gr.	65.2 gr.	67.5 gr.	
H4831	66.1 gr.	68.2 gr.	70.4 gr.	72.5 gr.	

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.

# 30 CALIBER (.308" Dia.)

## 220 GRAIN ROUND NOSE #3090

CARTRIDGE OVERALL LENGTH 3.360"

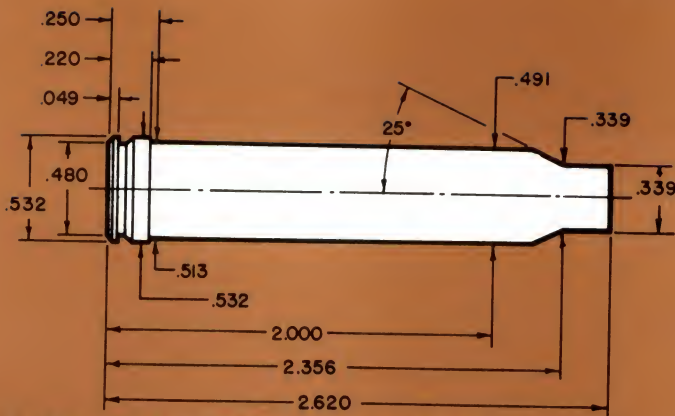


POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4350		61.5 gr.	63.8 gr.	66.1 gr.	68.4 gr.
WIN 760	58.5 gr.	61.2 gr.	63.9 gr.	66.7 gr.	
H4831		64.0 gr.	66.8 gr.	69.0 gr.	
H450		66.6 gr.	69.0 gr.	71.2 gr.	
H870	75.8 gr.	78.4 gr.	81.2 gr.		

\*These data may also be used with the 30 cal. 220 gr. FMJ.



*Indicates maximum load • use with caution*



## 300 WINCHESTER MAGNUM

**RIFLE: WINCHESTER MODEL 70**

**BARREL: 24", 1 in 10" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

In 1963 Winchester introduced the 300 Winchester Magnum. The cartridge is based on the 338 Winchester with the shoulder moved forward by .156" and the case lengthened by .120". The only problem, if it is a problem, is the neck is less than 1 caliber in length. The 300 Winchester Magnum is on par with the 308 Norma Magnum and the 300 Weatherby Magnum, and is capable of taking all North American big game. It has steadily grown in popularity, and because it is chambered by many different arms manufacturers, it enjoys a greater following than the 308 Norma or the 300 Weatherby. The 300 Winchester Magnum is also used extensively in 600 and 1000 yard matches.

Again, being a 30 caliber has its advantages. The wide selection of bullets allows the cartridge a greater range of uses. If the reloader is inclined to do some varminting with his 300 Winchester, he can load the 110 grain Spire Point to 3700 fps or the 130 grain Spire Point to 3500 fps! For big game, the reloader has bullets from 150 to 220 grains to choose from.

In our rifle H205 gave very good results with light bullets, while IMR 4831 and Norma MRP gave the best results with the heavier bullets. When using cases of this size, it is imperative that the reloader work with near maximum loads. Reduced loads with slow burning powder can produce dangerous hangfires and large muzzle flashes.



**30 CALIBER (.308" Dia.)**
**110 GRAIN SPIRE POINT #3010**
**CARTRIDGE OVERALL LENGTH 3.310"**


POWDER	VELOCITY			
	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4895	65.9 gr.	67.3 gr.	68.8 gr.	70.3 gr.
IMR 4064	67.4 gr.	69.1 gr.	70.9 gr.	72.7 gr.
IMR 4350	74.7 gr.	76.5 gr.	78.2 gr.	79.9 gr.
H205		77.7 gr.	80.4 gr.	83.1 gr.
N204	78.5 gr.	80.1 gr.	81.6 gr.	83.2 gr.

**30 CALIBER (.308" Dia.)**
**130 GRAIN SPIRE POINT #3020**
**CARTRIDGE OVERALL LENGTH 3.300"**


POWDER	VELOCITY			
	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4064	62.8 gr.	65.6 gr.	68.4 gr.	
IMR 4350	71.8 gr.	73.6 gr.	75.3 gr.	77.1 gr.
H205	71.7 gr.	74.1 gr.	76.5 gr.	78.9 gr.
N204	74.3 gr.	76.2 gr.	78.1 gr.	80.0 gr.
IMR 4831	75.6 gr.	77.4 gr.	79.1 gr.	80.9 gr.
H4831	78.0 gr.	80.0 gr.	82.0 gr.	84.0 gr.
NORMA MRP	79.5 gr.	81.4 gr.	83.3 gr.	85.2 gr.

**30 CALIBER (.308" Dia.)**
**150 GRAIN SPIRE POINT #3031**
**CARTRIDGE OVERALL LENGTH 3.325"**


POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	61.4 gr.	63.8 gr.	66.1 gr.		
H205	68.1 gr.	70.8 gr.	73.5 gr.	76.2 gr.	
IMR 4350	68.9 gr.	70.7 gr.	72.5 gr.	74.3 gr.	76.1 gr.
N204	71.4 gr.	73.6 gr.	75.8 gr.		
IMR 4831	72.5 gr.	74.2 gr.	75.9 gr.	77.6 gr.	
H4831	74.7 gr.	76.5 gr.	78.3 gr.	80.1 gr.	
NORMA MRP	75.4 gr.	77.5 gr.	79.6 gr.	81.8 gr.	83.9 gr.

These data may also be used with the 150 gr. RN and 150 gr. FMJ bullets, though overall length may vary.

*Indicates maximum load • use with caution*



**30 CALIBER (.308" Dia.)****165 GRAIN BOAT TAIL  
SPIRE POINT #3045**

CARTRIDGE OVERALL LENGTH 3.355"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	57.7 gr.	60.3 gr.	62.9 gr.		
IMR 4350	64.5 gr.	66.5 gr.	68.5 gr.	70.5 gr.	
N204	66.5 gr.	68.7 gr.	71.0 gr.	73.3 gr.	
IMR 4831	68.3 gr.	70.2 gr.	72.0 gr.	73.9 gr.	75.8 gr.
H4831	70.9 gr.	72.6 gr.	74.3 gr.	76.0 gr.	77.6 gr.
NORMA MRP	71.8 gr.	73.6 gr.	75.5 gr.	77.4 gr.	79.2 gr.

These data may also be used with the 30 cal. 165 gr. SP bullet.

**30 CALIBER (.308" Dia.)****180 GRAIN SPIRE POINT #3070**

CARTRIDGE OVERALL LENGTH 3.365"



POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4064	56.5 gr.	59.4 gr.	62.3 gr.		
IMR 4350	62.2 gr.	64.6 gr.	66.9 gr.	69.2 gr.	71.5 gr.
N204	63.2 gr.	66.4 gr.	69.5 gr.		
IMR 4831	66.2 gr.	68.6 gr.	70.9 gr.	73.3 gr.	
H4831	68.2 gr.	70.4 gr.	72.6 gr.	74.8 gr.	
NORMA MRP	69.9 gr.	72.1 gr.	74.2 gr.	76.4 gr.	78.6 gr.

These data may also be used with the 30 cal. 180 gr. RN bullet, though overall length may vary.

**30 CALIBER (.308" Dia.)****190 GRAIN BOAT TAIL  
HOLLOW POINT #3080**

CARTRIDGE OVERALL LENGTH 3.500"



POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4064	55.0 gr.	58.1 gr.	61.1 gr.		
IMR 4350	61.4 gr.	63.7 gr.	66.0 gr.	68.3 gr.	70.6 gr.
N204	63.5 gr.	66.0 gr.	68.6 gr.	71.1 gr.	
IMR 4831	65.2 gr.	67.3 gr.	69.4 gr.	71.5 gr.	
H4831	67.3 gr.	69.5 gr.	71.8 gr.	74.0 gr.	
NORMA MRP	68.8 gr.	70.8 gr.	72.8 gr.	74.8 gr.	76.8 gr.

These data may also be used with the 30 cal. 190 gr. BTSP Bullet, though overall length may vary.

Indicates maximum load • use with caution

**30 CALIBER (.308" Dia.)**

**220 GRAIN ROUND NOSE #3090**



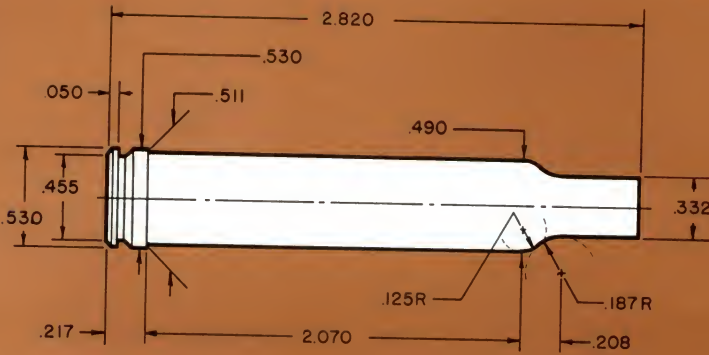
CARTRIDGE OVERALL LENGTH 3.345"

POWDER	VELOCITY			
	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4064	52.8 gr.	55.7 gr.		
IMR 4350	57.5 gr.	60.3 gr.	63.2 gr.	66.1 gr.
N204	58.9 gr.	61.9 gr.	65.0 gr.	
IMR 4831	60.1 gr.	63.2 gr.	66.2 gr.	69.2 gr.
H4831	63.0 gr.	65.6 gr.	68.2 gr.	70.9 gr.
NORMA MRP		64.2 gr.	67.7 gr.	71.1 gr.

These data may also be used with the 30 cal. 220 gr. FMJ bullet.



*Indicates maximum load • use with caution*



## 300 WEATHERBY MAGNUM

**RIFLE:** WEATHERBY MARK V

**BARREL:** 24", 1 in 10" TWIST

**CASE:** WEATHERBY

**PRIMER:** FEDERAL 215

The 300 Weatherby Magnum is the best known and most widely used cartridge in the powerful Weatherby series. The success of the 300 WM in downing game at long ranges or hunting dangerous species has done much to confirm Roy Weatherby's theories of the importance of velocity in killing power — and prepare the way for the development of a host of other high intensity magnum cartridges, including the competitive but less powerful 308 Norma and 300 Winchester magnums.

With a full 400 fps top velocity advantage over the 30-06 when shooting 150, 165, or 180 gr. Hornady Spire Points, the 300 Weatherby Magnum can shoot flatter and place considerably more energy in distant targets than the '06 or its peers. Loaded with the explosive 130 gr. Spire Point it is the most powerful Weatherby suitable for varmint shooting.

As the loading data on the following pages will indicate, slower burning powders (4350, Norma MRP, H4831, and H450) are the most appropriate choices in the big 300 WM case when hunting weight bullets are used. To ignite the hefty charges of powder required for top velocities the Federal 215 primer is recommended. (The 215, a hot magnum primer, was developed specifically for this task.)

# 30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT #3010



CARTRIDGE OVERALL LENGTH 3.510"

POWDER	VELOCITY				
	3500 fps	3600 fps	3700 fps	3800 fps	3900 fps
IMR 4064	72.5 gr.	74.2 gr.	75.8 gr.	77.5 gr.	79.2 gr.
H4895			76.7 gr.	78.5 gr.	80.3 gr.
IMR 4350	79.8 gr.	81.5 gr.	83.3 gr.	85.0 gr.	86.7 gr.
IMR 4831	83.9 gr.	85.8 gr.	87.8 gr.	89.8 gr.	
H4831	87.3 gr.	89.0 gr.	90.8 gr.		
N204	87.8 gr.	89.5 gr.	91.2 gr.	92.8 gr.	
H450	87.0 gr.	89.1 gr.	91.1 gr.	93.2 gr.	95.2 gr.
NORMA MRP	88.7 gr.	90.9 gr.	93.1 gr.	95.3 gr.	

# 30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT #3020



CARTRIDGE OVERALL LENGTH 3.500"

POWDER	VELOCITY					
	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps	3700 fps
IMR 4064	69.6 gr.	71.3 gr.	72.9 gr.			
H4895	69.3 gr.	71.1 gr.	72.9 gr.	74.7 gr.		
IMR 4350	74.6 gr.	76.5 gr.	78.3 gr.	80.2 gr.	82.0 gr.	
IMR 4831	79.1 gr.	80.7 gr.	82.3 gr.	83.9 gr.		
N204	82.8 gr.	84.5 gr.	86.2 gr.	87.9 gr.	89.5 gr.	
H4831		84.0 gr.	85.8 gr.	87.7 gr.	89.5 gr.	
H450			85.2 gr.	88.2 gr.	91.2 gr.	94.1 gr.
NORMA MRP	82.3 gr.	84.4 gr.	86.6 gr.	88.7 gr.	90.8 gr.	

*Indicates maximum load • use with caution*



# 30 CALIBER (.308" Dia.) 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 3.520"



POWDER	VELOCITY					
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4064		68.9 gr.	70.5 gr.	72.1 gr.		
H4895	67.8 gr.	69.8 gr.	71.9 gr.	74.0 gr.		
IMR 4350	71.0 gr.	72.9 gr.	74.9 gr.	76.8 gr.	78.8 gr.	
IMR 4831	75.9 gr.	77.6 gr.	79.3 gr.	81.0 gr.	82.7 gr.	
N204	78.9 gr.	80.7 gr.	82.5 gr.	84.3 gr.		
NORMA MRP	79.0 gr.	81.1 gr.	83.3 gr.	85.4 gr.	87.6 gr.	
H4831	80.9 gr.	82.5 gr.	84.3 gr.	85.8 gr.	87.5 gr.	
H450			83.0 gr.	85.9 gr.	88.9 gr.	91.8 gr.

These data may also be used with the 30 cal 150 gr. RN and 150 gr. FMJ bullets, though overall length may vary.

300 WEATHERBY MAGNUM

# 30 CALIBER (.308" Dia.) 165 GRAIN SPIRE POINT #3040

CARTRIDGE OVERALL LENGTH 3.560"



POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4064	65.4 gr.	66.6 gr.	67.9 gr.	69.1 gr.	
H4895	65.3 gr.	67.3 gr.	69.3 gr.	71.3 gr.	
IMR 4350	69.9 gr.	72.1 gr.	74.2 gr.	76.3 gr.	
IMR 4831	73.9 gr.	75.9 gr.	77.8 gr.	79.8 gr.	
N204	75.4 gr.	77.9 gr.	80.5 gr.	83.1 gr.	
NORMA MRP	75.8 gr.	78.2 gr.	80.6 gr.	83.0 gr.	85.4 gr.
H450		79.1 gr.	81.1 gr.	83.1 gr.	85.1 gr.
H4831		79.5 gr.	81.5 gr.	83.6 gr.	85.6 gr.

These data may also be used with the 30 cal. 165 gr. BTSP bullet.

*Indicates maximum load • use with caution*

# **30 CALIBER (.308" Dia.)** **180 GRAIN SPIRE POINT #3070**

CARTRIDGE OVERALL LENGTH 3.560"



POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	62.9 gr.	64.3 gr.	65.7 gr.	67.1 gr.		
H4895	63.3 gr.	65.2 gr.	67.2 gr.	69.1 gr.		
IMR 4350	65.6 gr.	67.9 gr.	70.2 gr.	72.5 gr.	74.8 gr.	
IMR 4831	69.9 gr.	72.1 gr.	74.3 gr.	76.5 gr.	78.7 gr.	
N204		73.6 gr.	76.1 gr.	78.6 gr.	81.1 gr.	
NORMA MRP	72.5 gr.	74.8 gr.	77.0 gr.	79.3 gr.	81.6 gr.	
H4831		76.2 gr.	77.8 gr.	79.5 gr.	81.2 gr.	82.9 gr.
H450		76.1 gr.	78.1 gr.	80.1 gr.	82.0 gr.	84.0 gr.

These data may also be used with the 30 cal. 180 gr. RN bullet, though overall length may vary.

# **30 CALIBER (.308" Dia.)** **220 GRAIN ROUND NOSE #3090**

CARTRIDGE OVERALL LENGTH 3.530"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 4064	58.0 gr.	60.6 gr.	63.1 gr.		
H4895	57.6 gr.	60.4 gr.	63.2 gr.		
IMR 4350	61.7 gr.	64.1 gr.	66.5 gr.	68.9 gr.	
IMR 4831	64.8 gr.	67.2 gr.	69.6 gr.	72.0 gr.	
N204	66.1 gr.	69.1 gr.	72.2 gr.	75.2 gr.	
NORMA MRP	66.8 gr.	69.3 gr.	71.8 gr.	74.4 gr.	76.9 gr.
H4831		71.4 gr.	73.5 gr.	75.7 gr.	77.8 gr.
H450		71.5 gr.	73.7 gr.	75.8 gr.	78.0 gr.

These data may also be used with the 30 cal. 220 gr. FMJ bullet.



*Indicates maximum load • use with caution*



## PRIMER: FEDERAL 210

Reloaders using sporters based on the Model 1891 Mauser action should respect its strength limitations; it is not as strong as Mauser's more famous Model 1898, and maximum loads in the '91 should as a consequence be developed cautiously.

# **303 CALIBER (.312" Dia.)** **150 GRAIN SPIRE POINT #3120**

CARTRIDGE OVERALL LENGTH 2.815"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031		34.4 gr.	36.1 gr.	37.7 gr.	39.4 gr.	41.1 gr.
H4895		36.6 gr.	38.3 gr.	39.9 gr.	41.6 gr.	43.2 gr.
IMR 4064			38.4 gr.	40.3 gr.	42.2 gr.	44.1 gr.
IMR 4320	36.1 gr.	38.1 gr.	40.0 gr.	41.9 gr.	43.8 gr.	
H380		38.0 gr.	40.2 gr.	42.3 gr.	44.4 gr.	
IMR 4350	42.8 gr.	44.6 gr.	46.3 gr.	48.0 gr.	49.8 gr.	
H4831	46.7 gr.	48.0 gr.	49.3 gr.			
N204	46.4 gr.	48.0 gr.	49.5 gr.	51.1 gr.		

# **303 CALIBER (.312" Dia.)** **174 GRAIN ROUND NOSE #3130**

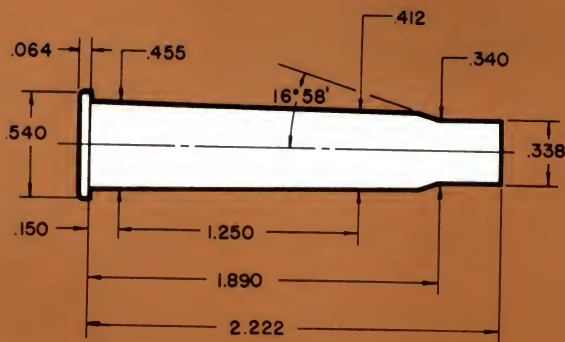
CARTRIDGE OVERALL LENGTH 2.850"



POWDER	VELOCITY				
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031		36.3 gr.	38.1 gr.	39.9 gr.	41.7 gr.
IMR 4064	36.0 gr.	37.9 gr.	39.9 gr.	41.9 gr.	43.8 gr.
H4895	36.5 gr.	38.4 gr.	40.2 gr.	42.0 gr.	43.9 gr.
IMR 4320		38.6 gr.	40.6 gr.	42.6 gr.	44.6 gr.
H380		39.9 gr.	42.2 gr.	44.5 gr.	46.9 gr.
IMR 4350	42.0 gr.	43.9 gr.	45.8 gr.	47.7 gr.	
N204	46.3 gr.	48.1 gr.	49.8 gr.	51.6 gr.	

Indicates maximum load • use with caution





## 303 BRITISH

**RIFLE: MODEL S NO. 4 MARK 1**

**BARREL: 25¼", 1 in 10" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

From 1888 to 1950, when it was replaced by the 7.62mm NATO cartridge, the 303 British was the military service cartridge of England and the British Empire. First loaded with 70 gr. of blackpowder and a 215 gr. round nose bullet, the 303's charge was replaced in 1892 with a more modern double-base smokeless powder load of cordite (long extruded strands of powder cut to the full length of the cartridge case chamber). Sporting ammunition in 303 British, loaded with single-base granular powders, is still available from Remington, Federal, Dominion, and Norma.

The 303 is roughly equivalent in power to the U.S. 30-40 Krag, itself a military cartridge later adapted to sporting purposes. Loaded with the Hornady 303 caliber 150 gr. Spire Point, the 303 British is suitable for most North American hunting up to ranges of 200-250 yards. For hunting at modest or close range, the 174 gr. Round Nose is an effective and quite dependable performer.

In our testing we found that case life of the 303 British in SMLE (Short Magazine Lee Enfield) actions tended to be short when top loads were fired. Such actions stretch cases when high velocities are used and head separation is the final result. Load down from the fastest velocities to prolong case life — and check cases frequently for signs of incipient separation.

# **303 CALIBER (.312" Dia.)** **150 GRAIN SPIRE POINT #3120**

CARTRIDGE OVERALL LENGTH 3.035"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	34.5 gr.	36.0 gr.	37.5 gr.	39.0 gr.	40.5 gr.	42.0 gr.
BL-C2		37.3 gr.	38.8 gr.	40.3 gr.	41.8 gr.	
IMR 4064			39.0 gr.	40.5 gr.	42.0 gr.	43.5 gr.
H4895	36.9 gr.	38.4 gr.	39.9 gr.	41.4 gr.	42.9 gr.	
IMR 4320			40.4 gr.	42.2 gr.	44.1 gr.	
H380	38.2 gr.	40.0 gr.	41.9 gr.	43.7 gr.	45.6 gr.	
IMR 4350	41.6 gr.	43.7 gr.	45.9 gr.	48.0 gr.	50.1 gr.	
WIN 760	42.5 gr.	44.4 gr.	46.3 gr.	48.1 gr.	50.0 gr.	

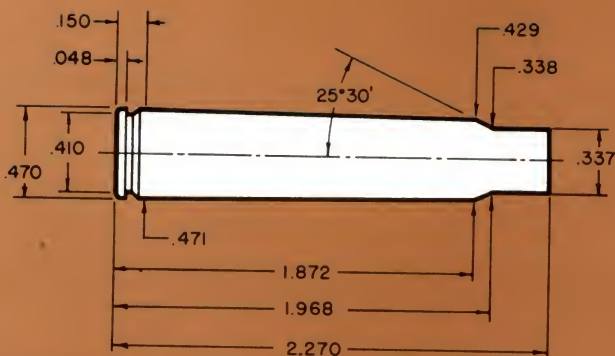
# **303 CALIBER (.312" Dia.)** **174 GRAIN ROUND NOSE #3130**

CARTRIDGE OVERALL LENGTH 2.975"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	31.4 gr.	33.2 gr.	35.1 gr.	36.9 gr.	
BL-C2	32.4 gr.	34.5 gr.	36.7 gr.	38.8 gr.	
IMR 4064			37.4 gr.	38.9 gr.	40.4 gr.
H4895	34.2 gr.	35.9 gr.	37.6 gr.	39.3 gr.	41.0 gr.
IMR 4320	34.3 gr.	36.1 gr.	37.8 gr.	39.7 gr.	41.5 gr.
H380		36.6 gr.	38.7 gr.	40.9 gr.	43.1 gr.
IMR 4350	39.8 gr.	41.5 gr.	43.1 gr.	44.8 gr.	46.5 gr.
WIN 760		41.5 gr.	43.4 gr.	45.3 gr.	47.2 gr.
N204	41.0 gr.	42.8 gr.	44.6 gr.	46.4 gr.	48.2 gr.
H4831	42.5 gr.	44.3 gr.	46.2 gr.		

*Indicates maximum load • use with caution*



## 7.7mm JAPANESE

**RIFLE: JAPANESE TYPE 99**

**BARREL: 25½", 1 in 9½" TWIST**

**CASE: NORMA**

**PRIMER: FEDERAL 210**

The 7.7mm Japanese was adopted as that nation's service cartridge in 1939. Chambered in the strong, modified Mauser design Type 99 action, the cartridge/rifle combination was intended as a replacement for the older Type 38 Japanese 6.5mm Arisaka. The 7.7mm service round was superior to the cartridge it was intended to replace, but the 6.5mm remained in action during WW II because full conversion to the new rifle could not be achieved.

Type 99's came to this country first as war souvenirs and later as war surplus collected by American occupation forces. The 7.7mm cartridge for which they were designed is similar in power to the 303 British and the 7.65 Mauser, and was loaded for military use with a 184 grain bullet to a velocity of 2390 fps. With the 303 caliber (.312") Hornady 150 grain Spire Point we were able to reach 2700 fps thereby approximating the performance of the 30-40 Krag.

In the early years of reloading for the 7.7mm Japanese shooters had to reform 30-06 cases to make up ammunition. Times are easier now; new Boxer-primed cases are now imported to this country from Norma. Eventually, however, we may revert to the former situation. With no new surplus stocks of Type 99's coming on the market, interest in the 7.7mm Japanese continues to decline from its post-war peak.



# **303 CALIBER (.312" Dia.)** **150 GRAIN SPIRE POINT #3120**



CARTRIDGE OVERALL LENGTH 3.100"

POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	35.3 gr.	36.7 gr.	38.1 gr.	39.5 gr.	40.9 gr.	
H4895	36.9 gr.	38.8 gr.	40.8 gr.	42.7 gr.	44.7 gr.	
H380	38.6 gr.	40.4 gr.	42.2 gr.	44.0 gr.		
IMR 4064	37.5 gr.	39.7 gr.	41.9 gr.	44.1 gr.	46.3 gr.	
IMR 4320		42.3 gr.	44.2 gr.	46.1 gr.		
IMR 4350	46.2 gr.	47.8 gr.	49.4 gr.	51.1 gr.	52.7 gr.	54.3 gr.
H4831	49.9 gr.	51.5 gr.	53.1 gr.	54.8 gr.	56.4 gr.	

# **303 CALIBER (.312" Dia.)** **174 GRAIN ROUND NOSE #3130**

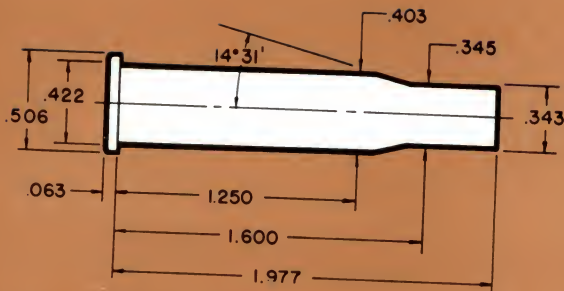


CARTRIDGE OVERALL LENGTH 3.000"

POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	31.8 gr.	33.3 gr.	34.8 gr.	36.3 gr.	37.8 gr.	39.3 gr.
H4895		34.5 gr.	36.6 gr.	38.7 gr.	40.8 gr.	42.9 gr.
IMR 4064	33.4 gr.	35.3 gr.	37.1 gr.	39.0 gr.	40.9 gr.	42.8 gr.
H380	33.6 gr.	35.4 gr.	37.3 gr.	39.1 gr.		
IMR 4320	34.7 gr.	36.4 gr.	38.2 gr.	40.0 gr.	41.8 gr.	
IMR 4350	40.1 gr.	42.0 gr.	43.9 gr.	45.9 gr.	47.8 gr.	
H4831	44.1 gr.	45.8 gr.	47.4 gr.	49.1 gr.	50.8 gr.	52.5 gr.

*Indicates maximum load • use with caution*





## 32 WINCHESTER SPECIAL

**RIFLE: WINCHESTER MODEL 94**

**BARREL: 20", 1 in 16" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

The 32 Special had its origin in 1895 when it was introduced by Winchester in their Model 94 lever action. The primary intent of the cartridge was to offer a smokeless loaded round that could be reloaded with black powder. Needless to say, the hoped for popularity never came about.

The power of the 32 Special is about the same as the 30-30. Hornady makes a 170 grain Flat Point bullet constructed with our famous Inner Groove and InterLock designs. These features allow uniform, controlled expansion and good weight retention on impact, without shedding the jacket. The 32 Special is an adequate deer cartridge for ranges up to 150 yards.

**32 CALIBER (.321" Dia.)**

**170 GRAIN FLAT POINT #3210**

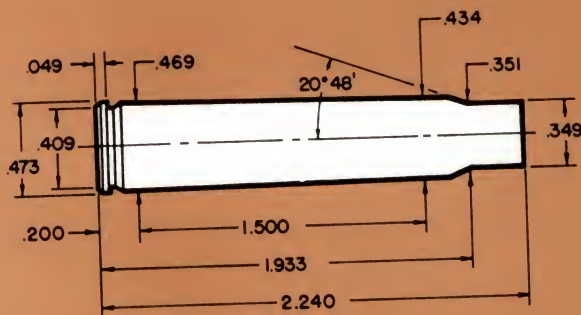
**CARTRIDGE OVERALL LENGTH 2.605"**



### VELOCITY

POWDER	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
H4198	22.7 gr.	23.9 gr.	25.0 gr.	26.1 gr.	27.3 gr.	
IMR 3031	26.1 gr.	27.5 gr.	28.8 gr.	30.2 gr.	31.5 gr.	32.8 gr.
IMR 4064	28.6 gr.	30.0 gr.	31.3 gr.	32.6 gr.	33.9 gr.	35.2 gr.
H4895		29.8 gr.	31.2 gr.	32.6 gr.	34.0 gr.	35.5 gr.
IMR 4320	29.4 gr.	30.9 gr.	32.4 gr.	33.9 gr.	35.4 gr.	36.9 gr.
H380		30.7 gr.	32.5 gr.	34.4 gr.	36.2 gr.	

*Indicates maximum load • use with caution*



## 8mm MAUSER (8 X 57 S)

**RIFLE: MAUSER MODEL 1898**

**BARREL: 23", 1 in 9¼" TWIST**

**CASE: REMINGTON**

**PRIMER: REMINGTON 9½**

The loading data presented here is for use in Model 98 Mauser actions or any other modern action chambered for the round. Do not use this data for the Model 1888; reduce all loads by at least 25% and work up loads very carefully.

This German military round originated in 1888 with a bullet diameter of .318" and the cartridge was then designated the 8 X 57 J. In 1905 the bullet diameter was changed to .323" and the cartridge was then renamed the 8 X 57 JS or 8 X 57 S.

The 8 X 57 S is a cartridge that largely duplicates the 30-06 and is therefore appropriate for nearly all North American game.

There are four Hornady bullets suitable for use in the 8 X 57 S: The 125 grain Spire Point for varminting, the 150 grain Spire Point and 170 grain Round Nose for medium game, and the 220 grain Spire Point for heavier game such as elk. The 220 grain Spire Point was designed primarily for the larger 8mm caliber cartridges and their increased velocities. It makes an excellent heavy game bullet when loaded to near maximum velocities in the 8 X 57 S.

IMR 4350 is an excellent choice for the 8 X 57 S with all Hornady bullets, as it performed very well with our test rifle.

8mm (.323" Dia.)

125 GRAIN SPIRE POINT #3230

CARTRIDGE OVERALL LENGTH 2.880"



POWDER	VELOCITY					
	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
H4198	37.8 gr.	39.0 gr.	40.3 gr.	41.6 gr.	42.8 gr.	44.1 gr.
N200			42.2 gr.	44.1 gr.	46.1 gr.	48.0 gr.
IMR 3031	43.0 gr.	44.3 gr.	45.5 gr.	46.8 gr.	48.0 gr.	49.2 gr.

8mm (.323" Dia.)

150 GRAIN SPIRE POINT #3232

CARTRIDGE OVERALL LENGTH 2.975"



POWDER	VELOCITY					
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	40.7 gr.	42.3 gr.	43.9 gr.	45.5 gr.	47.1 gr.	48.7 gr.
IMR 4064	43.0 gr.	44.5 gr.	46.0 gr.	47.5 gr.	49.0 gr.	50.4 gr.
WIN 748			47.3 gr.	48.7 gr.	50.1 gr.	51.6 gr.
H4895	43.6 gr.	45.4 gr.	47.2 gr.	48.9 gr.	50.7 gr.	52.5 gr.
IMR 4320	44.1 gr.	46.0 gr.	47.9 gr.	49.7 gr.	51.6 gr.	53.5 gr.
H380	44.1 gr.	46.3 gr.	48.6 gr.	50.8 gr.	53.1 gr.	55.3 gr.
IMR 4350	51.2 gr.	53.3 gr.	55.4 gr.			

8mm (.323" Dia.)

170 GRAIN ROUND NOSE #3235

CARTRIDGE OVERALL LENGTH 2.890"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	40.4 gr.	42.1 gr.	43.8 gr.	45.5 gr.	47.2 gr.	
IMR 4064	42.2 gr.	43.8 gr.	45.4 gr.	47.0 gr.	48.6 gr.	
H4895	43.3 gr.	45.0 gr.	46.7 gr.	48.4 gr.	50.1 gr.	
IMR 4320	44.0 gr.	45.7 gr.	47.4 gr.	49.1 gr.	50.8 gr.	52.5 gr.
WIN 748	44.8 gr.	46.3 gr.	47.8 gr.	49.3 gr.	50.9 gr.	
H380	43.0 gr.	45.4 gr.	47.9 gr.	50.3 gr.	52.8 gr.	
IMR 4350	49.3 gr.	51.6 gr.	53.8 gr.	56.0 gr.		

Indicates maximum load • use with caution

8mm MAUSER (8 X 57 S)

**8mm (.323" Dia.)**

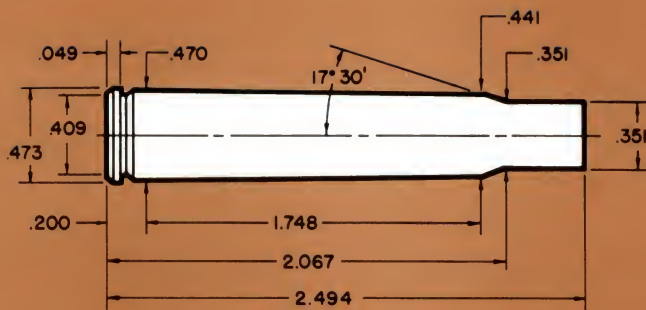
**220 GRAIN SPIRE POINT #3238**



**CARTRIDGE OVERALL LENGTH 3.000"**

POWDER	VELOCITY			
	2000 fps	2100 fps	2200 fps	2300 fps
IMR 4064	38.4 gr.	40.1 gr.		
IMR 4350	41.8 gr.	44.0 gr.	46.1 gr.	
WIN 760	42.5 gr.	44.4 gr.	46.4 gr.	
IMR 4831	46.3 gr.	48.4 gr.	50.4 gr.	
NORMA MRP	48.5 gr.	50.8 gr.	53.1 gr.	55.4 gr.





## 8mm/06

**RIFLE: MAUSER MODEL 1898**

**BARREL: 23½", 1 in 9¼" TWIST**

**CASE: GOVERNMENT**

**PRIMER: WINCHESTER 120**

This fine wildcat is, as its name clearly indicates, the 30-06 case necked up to 8mm. Necessity played a substantial role in its development and its rise to popularity; owners of Mauser Model 1898's chambered for the 8 x 57 found it difficult to come by 8mm Mauser ammo and cases during and in the first years after WW II. By the simple expedient of rechambering their Mausers for the necked up '06 case, they solved their ammo problems — and got some added benefits in terms of improved performance. As many surplus military 8mm's reached the U.S. civilian market through the 1950's, the 8mm/06 conversion grew even more popular. While this surge of shooter interest in the 8mm/06 has receded, it left in its wake a great many fans of this wildcat.

Bullet selection for the 8mm/06 is not as extensive as it is for the 30-06, but it is nonetheless adequate. The Hornady 150 grain Spire Point is by far our most popular bullet for the 8mm/06. Efficient and accurate, the 150 grain SP is preferred when game will be hunted at longer ranges. The dependable 170 grain Round Nose is an excellent choice for hunting at close to moderate ranges when some brushbusting may be required. The 125 grain Spire Point is a real threat to varmints.

**8mm (.323" Dia.)**

**125 GRAIN SPIRE POINT #3230**



CARTRIDGE OVERALL LENGTH 3.105"

POWDER	VELOCITY					
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 3031	46.6 gr.	48.1 gr.	49.5 gr.	51.0 gr.	52.5 gr.	54.0 gr.
IMR 4064	49.5 gr.	51.0 gr.	52.6 gr.	54.2 gr.	55.7 gr.	
H4895	49.8 gr.	51.4 gr.	52.9 gr.	54.4 gr.	55.9 gr.	57.4 gr.
BL-C2	48.5 gr.	50.4 gr.	52.3 gr.	54.2 gr.	56.1 gr.	
H380			54.3 gr.	55.8 gr.	57.3 gr.	58.8 gr.
IMR 4320	50.9 gr.	52.5 gr.	54.2 gr.	55.8 gr.	57.4 gr.	59.0 gr.

**8mm (.323" Dia.)**

**150 GRAIN SPIRE POINT #3232**



CARTRIDGE OVERALL LENGTH 3.175"

POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 3031		45.1 gr.	46.8 gr.	48.6 gr.	50.4 gr.	52.2 gr.
H4895	45.9 gr.	47.7 gr.	49.5 gr.	51.3 gr.	53.1 gr.	54.9 gr.
IMR 4064	46.3 gr.	48.0 gr.	49.8 gr.	51.5 gr.	53.3 gr.	55.0 gr.
BL-C2	45.2 gr.	47.3 gr.	49.4 gr.	51.5 gr.	53.5 gr.	
IMR 4320	47.2 gr.	49.0 gr.	50.7 gr.	52.4 gr.	54.1 gr.	
H380	49.2 gr.	50.9 gr.	52.7 gr.	54.5 gr.	56.3 gr.	
WIN 760	52.8 gr.	54.7 gr.	56.6 gr.	58.5 gr.	60.4 gr.	62.2 gr.
IMR 4350	54.2 gr.	55.9 gr.	57.5 gr.	59.2 gr.		
N204	54.6 gr.	56.6 gr.	58.5 gr.	60.5 gr.		

*Indicates maximum load • use with caution*

8mm (.323" Dia.)

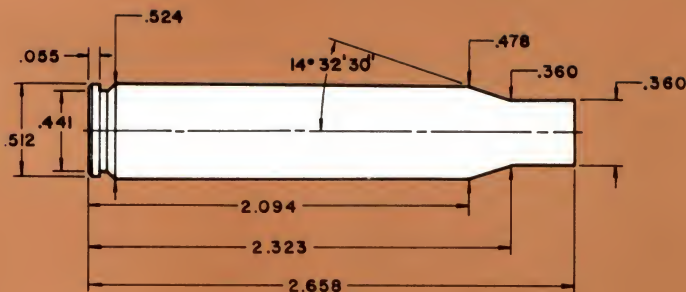
170 GRAIN ROUND NOSE #3235



CARTRIDGE OVERALL LENGTH 3.080"

VELOCITY					
POWDER	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031		45.3 gr.	47.1 gr.	48.9 gr.	50.7 gr.
IMR 4064		47.8 gr.	49.6 gr.	51.4 gr.	53.3 gr.
H4895		47.8 gr.	49.7 gr.	51.6 gr.	53.6 gr.
IMR 4320	46.8 gr.	48.6 gr.	50.4 gr.	52.3 gr.	54.1 gr.
BL-C2	47.3 gr.	49.0 gr.	50.7 gr.	52.4 gr.	54.2 gr.
H380	48.4 gr.	50.4 gr.	52.4 gr.	54.4 gr.	56.4 gr.
IMR 4350			55.4 gr.	58.0 gr.	60.6 gr.
WIN 760	53.1 gr.	54.8 gr.	56.5 gr.	58.2 gr.	59.8 gr.
N204	55.5 gr.	57.4 gr.	59.3 gr.	61.2 gr.	

8mm/106



## 8mm X 68mm S

**RIFLE: MAUSER 66**

**BARREL: 26", 1 in 11 $\frac{1}{8}$ " TWIST**

**CASE: RWS**

**PRIMER: FEDERAL 215**

This modern cartridge was developed in Germany and was first loaded by RWS in 1940. The 8 X 68 S is a non-belted magnum that narrowly misses duplicating the ballistics of the 338 Winchester and the new 8mm Remington Magnum and would make a superb all around big game rifle for North America. Publicity in the U.S. has been minimal primarily because there is only one rifle imported that is chambered for this round — the Mannlicher-Schoenauer Model S.

Hornady provides four .323" diameter bullets that work very well in the 8 X 68 S: The 125 grain Spire Point, the 150 grain Spire Point, the 170 grain Round Nose, and the new 220 grain Spire Point. The 220 grain Spire Point is the best bullet choice for most hunting situations that the 8 X 68 enthusiast might encounter. This bullet is designed to give controlled expansion at the higher velocities the 8 X 68 S and the 8mm Remington Magnum cartridges deliver. Also, as in all Hornady hunting bullets, the 220 grain Spire Point features our Inner Groove jacket design for controlled expansion and the InterLock ring that locks the core and jacket together to prevent separation on impact.

During our testing the powders that performed best in our firearms were N204 and IMR 4350.

Dies for reloading the 8 X 68 S are currently available from Pacific Tool Company, a division of Hornady.



**8mm (.323" Dia.)**
**125 GRAIN SPIRE POINT #3230**
**CARTRIDGE OVERALL LENGTH 3.325"**


POWDER	VELOCITY				
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps
IMR 4350	70.1 gr.	72.1 gr.	74.2 gr.	76.3 gr.	
WIN 760	71.8 gr.	74.1 gr.	76.4 gr.	78.7 gr.	81.0 gr.
H450	75.9 gr.	78.7 gr.	81.4 gr.	84.2 gr.	
NORMA MRP	77.5 gr.	79.7 gr.	82.0 gr.	84.2 gr.	

**8mm (.323" Dia.)**
**150 GRAIN SPIRE POINT #3232**
**CARTRIDGE OVERALL LENGTH 3.400"**


POWDER	VELOCITY				
	2900 fps	3000 fps	3100 fps	3200 fps	3300 fps
IMR 4350	67.0 gr.	69.2 gr.	71.4 gr.	73.5 gr.	
WIN 760	67.6 gr.	69.8 gr.	72.0 gr.	74.2 gr.	76.4 gr.
IMR 4831	70.4 gr.	72.3 gr.	74.3 gr.		
H450	71.0 gr.	73.9 gr.	76.7 gr.	79.6 gr.	82.4 gr.
NORMA MRP	73.8 gr.	75.9 gr.	78.0 gr.	80.1 gr.	82.2 gr.

**8mm (.323" Dia.)**
**170 GRAIN ROUND NOSE #3235**
**CARTRIDGE OVERALL LENGTH 3.250"**


POWDER	VELOCITY				
	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps
IMR 4350	63.6 gr.	65.7 gr.	67.9 gr.	70.0 gr.	72.1 gr.
WIN 760	64.8 gr.	67.2 gr.	69.5 gr.	71.9 gr.	74.3 gr.
IMR 4831	66.8 gr.	69.0 gr.	71.2 gr.	73.4 gr.	75.5 gr.
N204	68.8 gr.	70.8 gr.	72.8 gr.	74.8 gr.	76.8 gr.
H450		70.5 gr.	73.1 gr.	75.7 gr.	78.3 gr.
NORMA MRP	69.4 gr.	71.8 gr.	74.2 gr.	76.6 gr.	79.0 gr.

*Indicates maximum load • use with caution*
**8mm X 68mm S**

**8mm (.323" Dia.)**

**220 GRAIN SPIRE POINT #3238**

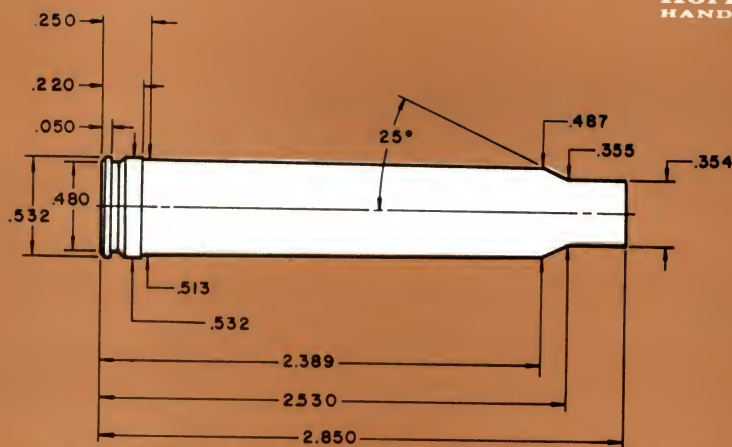
**CARTRIDGE OVERALL LENGTH 3.425"**



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
<b>WIN 760</b>	57.6 gr.	60.2 gr.	62.9 gr.	65.5 gr.	
<b>IMR 4350</b>	58.5 gr.	60.6 gr.	62.7 gr.	64.7 gr.	
<b>IMR 4831</b>	60.2 gr.	62.6 gr.	65.0 gr.	67.4 gr.	
<b>N204</b>	61.9 gr.	64.0 gr.	66.0 gr.	68.1 gr.	70.1 gr.
<b>H450</b>	61.6 gr.	64.0 gr.	66.4 gr.	68.8 gr.	
<b>NORMA MRP</b>		65.0 gr.	67.3 gr.	69.5 gr.	71.8 gr.



*Indicates maximum load • use with caution*



## 8mm REMINGTON MAGNUM

**RIFLE:** REMINGTON BDL 700

**BARREL:** 24", 1 in 10" TWIST

**CASE:** R-P

**PRIMER:** REMINGTON 9½M

Introduced by Remington in 1977 in their Model 700 bolt action rifle, this magnum could become a favorite of the big game hunters of North America. The 8mm Magnum offers a decided advantage over the 300 Magnums in that it can drive the 220 grain Spire Point at greater velocity. The better ballistic coefficient of the 220 grain Spire Point provides a flatter trajectory with more energy at the target.

Hornady was the first manufacturer to offer a bullet (220 grain Spire Point) for reloading that was designed expressly for the 8mm Remington Magnum. This bullet has also proved to be an excellent choice for the 8 X 57 S.

During our testing IMR 4350 gave the most uniform results with the best accuracy. Norma MRP displayed a great deal of muzzle flash when fired at less than near maximum charges, but otherwise gave good uniform results.

8mm (.323" Dia.)

125 GRAIN SPIRE POINT #3230

CARTRIDGE OVERALL LENGTH 3.550"



POWDER	VELOCITY					
	3100 fps	3200 fps	3300 fps	3400 fps	3500 fps	3600 fps
IMR 4064		68.8 gr.	70.7 gr.	72.6 gr.	74.5 gr.	76.4 gr.
IMR 4350	75.6 gr.	77.5 gr.	79.4 gr.	81.4 gr.	83.3 gr.	85.2 gr.
IMR 4831		81.5 gr.	83.7 gr.	86.0 gr.	88.2 gr.	90.4 gr.
NORMA MRP		84.4 gr.	86.7 gr.	88.9 gr.	91.1 gr.	93.4 gr.

8mm (.323" Dia.)

150 GRAIN SPIRE POINT #3232

CARTRIDGE OVERALL LENGTH 3.550"



POWDER	VELOCITY				
	3000 fps	3100 fps	3200 fps	3300 fps	3400 fps
IMR 4064	66.2 gr.	68.3 gr.	70.4 gr.	72.6 gr.	74.7 gr.
IMR 4320	67.6 gr.	70.0 gr.	72.5 gr.	74.9 gr.	
IMR 4350	73.9 gr.	75.9 gr.	77.8 gr.	79.8 gr.	
IMR 4831	78.8 gr.	80.5 gr.	82.2 gr.	83.9 gr.	85.6 gr.
NORMA MRP	79.3 gr.	81.7 gr.	84.1 gr.	86.6 gr.	89.0 gr.

 Indicates maximum load • use with caution



8mm (.323" Dia.)

170 GRAIN ROUND NOSE #3235

CARTRIDGE OVERALL LENGTH 3.450"



POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4064	62.0 gr.	64.7 gr.	67.4 gr.	70.2 gr.	
IMR 4320		67.0 gr.	69.4 gr.	71.7 gr.	74.1 gr.
IMR 4350	71.0 gr.	73.0 gr.	75.1 gr.	77.2 gr.	79.2 gr.
IMR 4831		77.1 gr.	79.1 gr.	81.2 gr.	83.2 gr.
NORMA MRP			81.2 gr.	83.5 gr.	85.9 gr.

8mm REMINGTON MAGNUM

8mm (.323" Dia.)

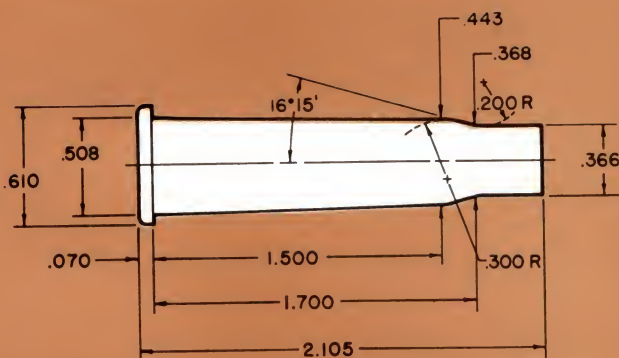
220 GRAIN SPIRE POINT #3238

CARTRIDGE OVERALL LENGTH 3.600"



POWDER	VELOCITY					
	2500 fps	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps
IMR 4320	60.4 gr.	63.3 gr.	66.2 gr.	69.2 gr.		
IMR 4350	64.9 gr.	67.6 gr.	70.3 gr.	73.0 gr.		
IMR 4831		70.6 gr.	73.2 gr.	75.8 gr.	77.0 gr.	78.3 gr.
NORMA MRP	69.8 gr.	72.2 gr.	74.5 gr.	76.9 gr.	78.1 gr.	79.3 gr.
H4831		72.9 gr.	75.4 gr.	77.8 gr.	79.0 gr.	80.3 gr.
WIN 785		73.8 gr.	75.7 gr.	77.6 gr.	78.6 gr.	79.6 gr.
H450	72.4 gr.	74.8 gr.	77.2 gr.	79.7 gr.	80.9 gr.	82.1 gr.
H870	82.9 gr.	85.8 gr.	88.7 gr.	91.5 gr.	93.0 gr.	

Indicates maximum load • use with caution



## 33 WINCHESTER

**RIFLE: WINCHESTER MODEL 1886**

**BARREL: 24", 1 in 12" TWIST**

**CASE: REMINGTON**

**PRIMER: WINCHESTER**

The 33 Winchester came into existence in 1902 and was chambered in Winchester's Model 1886 lever action. In 1936 the cartridge was superseded by the 348 Winchester. The 33 Winchester never had a large following due in part to the lack of bullets available and the introduction of better cartridges shortly after its origin. Hornady is the only manufacturer that produces a suitable bullet for the 33 Winchester at the present time — the 200 grain Flat Point.

Because the 1886 action is not as strong as the more modern lever actions presently available, maximum loads listed should be approached with considerable caution.

### 338 CALIBER (.338" Dia.)

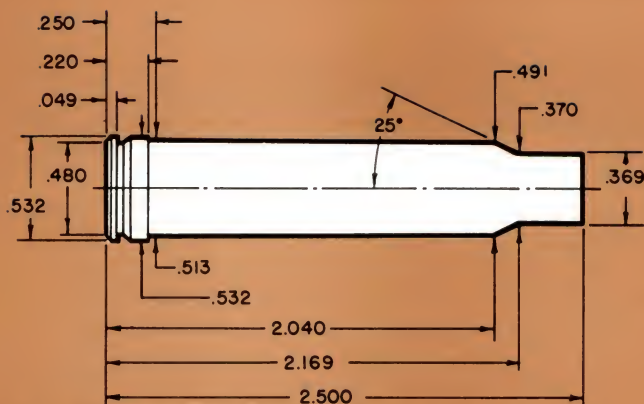
#### 200 GRAIN FLAT POINT #3315

CARTRIDGE OVERALL LENGTH 2.690"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
H4198	28.0 gr.	30.1 gr.	32.3 gr.	34.5 gr.		
IMR 3031	33.3 gr.	35.0 gr.	36.6 gr.	38.3 gr.	40.0 gr.	
IMR 4064	35.1 gr.	37.1 gr.	39.2 gr.	41.2 gr.		
H4895	35.1 gr.	37.1 gr.	39.1 gr.	41.1 gr.	43.1 gr.	45.1 gr.
WIN 748		37.1 gr.	39.1 gr.	41.2 gr.	43.2 gr.	

*Indicates maximum load • use with caution*



## 338 WINCHESTER MAGNUM

**RIFLE: WINCHESTER MODEL 70**

**BARREL: 24", 1 in 10" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

In 1958 Winchester necked down their proprietary 458 cartridge to 338 caliber and introduced the 338 Winchester Magnum in their already popular Model 70 action. This powerful and flat shooting cartridge is excellent for taking all North American game and most large African plains species.

Hornady offers four bullets for the 338: The 200 grain Spire Point and the 225 grain Spire Point for Elk and medium sized game, and the 250 grain Round Nose for heavy and dangerous game. The 225 grain Spire Point provides greater energy than the 200 grain Spire Point for those long range shots of 400 to 500 yards.

During our testing, the powders that gave the best overall results were IMR 4350 and Norma MRP. All powders listed performed satisfactorily. Caution: Loads should not be reduced from those listed, as dangerous hangfires and large muzzle flash can occur. All large capacity cartridges operate best at near maximum charges.

**338 CALIBER (.338" Dia.)**  
**200 GRAIN SPIRE POINT #3310**

CARTRIDGE OVERALL LENGTH 3.340"



VELOCITY					
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
H4895	54.3 gr.	56.9 gr.	59.5 gr.	62.1 gr.	
IMR 4064	55.8 gr.	58.4 gr.	61.0 gr.	63.6 gr.	
IMR 4320	58.2 gr.	60.4 gr.	62.7 gr.	65.0 gr.	
IMR 4350	66.2 gr.	68.4 gr.	70.6 gr.	72.8 gr.	
IMR 4831	66.3 gr.	68.3 gr.	70.3 gr.	72.3 gr.	
WIN 785	69.3 gr.	71.4 gr.	73.6 gr.	75.8 gr.	
NORMA MRP	69.7 gr.	71.8 gr.	73.9 gr.	76.0 gr.	
H4831	69.9 gr.	72.1 gr.	74.4 gr.	76.6 gr.	78.8 gr.
H450	70.1 gr.	72.4 gr.	74.7 gr.	77.0 gr.	

These data may also be used with the 338 cal. 200 gr. FP, though overall length may vary.

**338 CALIBER (.338" Dia.)**  
**225 GRAIN SPIRE POINT #3320**

CARTRIDGE OVERALL LENGTH 3.340"



VELOCITY					
POWDER	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
H4895	54.9 gr.	57.7 gr.	60.5 gr.		
IMR 4064	55.4 gr.	58.0 gr.	60.6 gr.		
IMR 4320	56.7 gr.	59.4 gr.	62.0 gr.	64.7 gr.	
IMR 4350	64.0 gr.	66.0 gr.	68.0 gr.	70.0 gr.	
IMR 4831	64.2 gr.	66.3 gr.	68.4 gr.	70.3 gr.	
H4831	66.0 gr.	68.0 gr.	70.0 gr.	72.0 gr.	74.0 gr.
H450	66.0 gr.	68.5 gr.	71.1 gr.	73.6 gr.	
WIN 785	67.0 gr.	69.6 gr.	72.2 gr.	74.8 gr.	
NORMA MRP	67.3 gr.	69.6 gr.	71.8 gr.	74.0 gr.	



*Indicates maximum load • use with caution*



**338 CALIBER (.338" Dia.)**  
**250 GRAIN ROUND NOSE #3330**

CARTRIDGE OVERALL LENGTH 3.340"

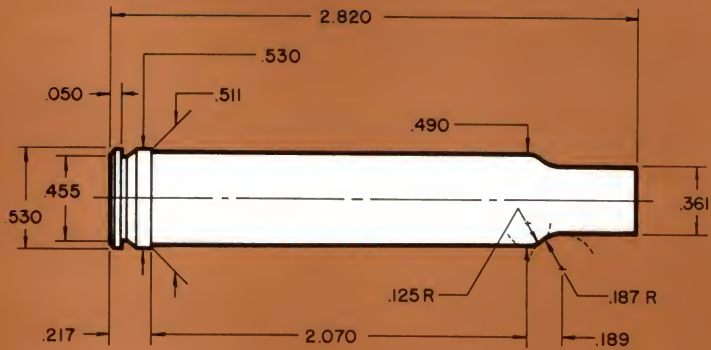


**338 WINCHESTER MAGNUM**

POWDER	VELOCITY			
	2400 fps	2500 fps	2600 fps	2700 fps
H4895	54.4 gr.	57.4 gr.	60.4 gr.	
IMR 4064	55.0 gr.	58.0 gr.	61.0 gr.	
IMR 4320	56.4 gr.	59.4 gr.	62.4 gr.	
IMR 4350	63.1 gr.	65.4 gr.	67.8 gr.	
IMR 4831	64.2 gr.	66.5 gr.	68.8 gr.	
H4831		67.7 gr.	70.0 gr.	72.2 gr.
NORMA MRP	65.7 gr.	68.5 gr.	71.2 gr.	74.0 gr.
WIN 785		68.6 gr.	71.6 gr.	
H450		69.0 gr.	72.2 gr.	75.4 gr.



*Indicates maximum load • use with caution*



## 340 WEATHERBY MAGNUM

**RIFLE: WEATHERBY MARK V**

**BARREL: 26", 1 in 10" TWIST**

**CASE: WEATHERBY**

**PRIMER: FEDERAL 215**

Roy Weatherby created the most powerful commercially available 338 caliber magnum by necking up the 300 Weatherby Magnum case to a .338" diameter. This new cartridge came into existence in 1962 and has become a popular choice among hunters. The 340 Weatherby Magnum can do everything the 338 Winchester Magnum can do, and more. With 200 fps more velocity (3000 fps for the 225 grain Spire Point), the 340 Weatherby is capable of delivering 2000 foot pounds of energy at 500 yards. At long ranges, the 340 Weatherby is ideal for elk, sheep, goats, and any of the African plains animals.

The accuracy of our test rifle was more than adequate for most hunting situations, with groups averaging under 2 inches at 100 yards. Best accuracy and uniformity was obtained using IMR 4831 and Norma MRP.

# 338 CALIBER (.338" Dia.) 200 GRAIN SPIRE POINT #3310

CARTRIDGE OVERALL LENGTH 3.680"



VELOCITY						
POWDER	2700 fps	2800 fps	2900 fps	3000 fps	3100 fps	3200 fps
IMR 4320	65.7 gr.	68.4 gr.	71.0 gr.	73.7 gr.	76.3 gr.	
IMR 4350	75.2 gr.	77.0 gr.	78.8 gr.	80.5 gr.	82.3 gr.	84.1 gr.
WIN 760	74.6 gr.	77.0 gr.	79.5 gr.	81.9 gr.	84.3 gr.	
IMR 4831	76.8 gr.	79.0 gr.	81.2 gr.	83.4 gr.	85.6 gr.	
H4831		80.7 gr.	82.2 gr.	84.0 gr.	86.2 gr.	89.9 gr.
H450		79.8 gr.	82.6 gr.	85.5 gr.	88.3 gr.	
NORMA MRP	80.9 gr.	83.3 gr.	85.6 gr.	87.9 gr.	90.3 gr.	92.6 gr.

These data may also be used with the 338 cal. 200 gr. FP bullet, though overall length may vary.

# 338 CALIBER (.338" Dia.) 225 GRAIN SPIRE POINT #3320

CARTRIDGE OVERALL LENGTH 3.655"



VELOCITY					
POWDER	2600 fps	2700 fps	2800 fps	2900 fps	3000 fps
IMR 4320	64.9 gr.	67.6 gr.	70.4 gr.		
WIN 760	72.5 gr.	74.7 gr.	76.9 gr.		
IMR 4350	72.0 gr.	74.4 gr.	77.0 gr.	79.5 gr.	82.0 gr.
IMR 4831	75.3 gr.	77.3 gr.	79.3 gr.	81.3 gr.	83.3 gr.
H4831		78.6 gr.	80.3 gr.	82.2 gr.	84.8 gr.
H450		78.9 gr.	81.4 gr.	83.9 gr.	86.4 gr.
NORMA MRP	78.9 gr.	81.0 gr.	83.2 gr.	85.3 gr.	87.5 gr.

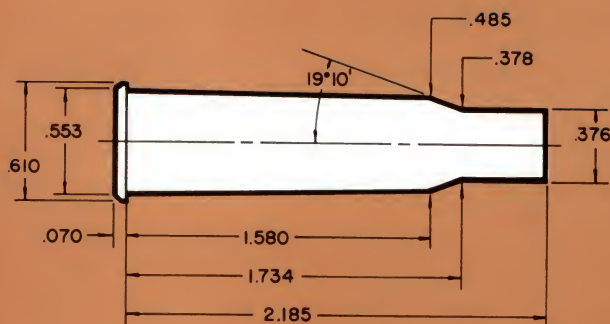
# 338 CALIBER (.338" Dia.) 250 GRAIN ROUND NOSE #3330

CARTRIDGE OVERALL LENGTH 3.690"



VELOCITY						
POWDER	2500 fps	2600 fps	2700 fps	2750 fps	2800 fps	2850 fps
IMR 4320	63.9 gr.	67.0 gr.	70.1 gr.	71.6 gr.		
IMR 4350	71.8 gr.	74.4 gr.	77.0 gr.	78.3 gr.	79.6 gr.	
IMR 4831	74.3 gr.	76.5 gr.	78.7 gr.	79.8 gr.	80.9 gr.	
H4831	75.4 gr.	77.5 gr.	79.6 gr.	80.7 gr.	81.7 gr.	82.8 gr.
H450	75.0 gr.	77.5 gr.	80.1 gr.	81.4 gr.	82.6 gr.	83.9 gr.
NORMA MRP	76.8 gr.	79.6 gr.	82.5 gr.	83.9 gr.	85.3 gr.	

Indicates maximum load • use with caution



## 348 WINCHESTER

**RIFLE:** WINCHESTER MODEL 71

**BARREL:** 24", 1 in 12" TWIST

**CASE:** WINCHESTER

**PRIMER:** FEDERAL 210

The only rifle ever made for the 348 Winchester was that firm's Model 71, a modernized version of the old lever action Model 1886. Announced in 1936, the Model 71 was discontinued in 1958 after new cartridge and rifle developments (the 358 Winchester and the Model 88 lever action) made it obsolete. The big Model 71 was a well made firearm, but bulky and expensive to produce. Its top ejection necessitated side mounting of the telescopic sights more and more hunters prefer today. The Model 88 which superseded it (albeit in different calibers) was designed to accommodate scopes more readily.

The 348 Winchester is among the most powerful of the rimmed smokeless powder cartridges so popular in lever actions. It is a good big game hunting cartridge for moderate ranges and brushy conditions and one still quite popular in Alaska.

The 348 caliber 200 grain Hornady Flat Point can be loaded up to 2500 fps in the Model 71, and this bullet offers exceptionally dependable expansion for sure killing power with the 348 Winchester cartridge. 4320 and 4350 are fine powder choices for loading the 348 case.



**348 CALIBER (.348" Dia.)**  
**200 GRAIN FLAT POINT #3410**

CARTRIDGE OVERALL LENGTH 2.830"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031		42.6 gr.	44.8 gr.	47.0 gr.	49.2 gr.
H4895		44.0 gr.	47.0 gr.	50.0 gr.	53.0 gr.
IMR 4064	41.8 gr.	44.9 gr.	48.0 gr.	51.1 gr.	
IMR 4320	44.1 gr.	46.6 gr.	49.1 gr.	51.6 gr.	54.1 gr.
WIN 760		51.9 gr.	54.3 gr.	56.7 gr.	59.1 gr.
IMR 4350	54.2 gr.	55.9 gr.	57.5 gr.	59.1 gr.	60.7 gr.
N204	54.1 gr.	57.1 gr.	60.1 gr.	63.1 gr.	66.1 gr.
H450	58.2 gr.	60.1 gr.	62.1 gr.	64.1 gr.	
H4831	58.5 gr.	60.8 gr.	63.1 gr.	65.4 gr.	

**348 WINCHESTER**



## 357 MAGNUM (RIFLE)

**RIFLE:** WINCHESTER MODEL 1892

**BARREL:** 22 $\frac{3}{4}$ ", 1 in 36" TWIST

**CASE:** WESTERN

**PRIMER:** ALCAN SMALL PISTOL

There's a certain appeal to the idea of reloading one cartridge for both rifle and pistol, and a good many shooters have purchased a pair of Ruger 44 Magnums (the Super Blackhawk pistol and the Ruger Carbine) to simplify their reloading.

When chambering in a rifle, such as the lever action Winchester Model 1892 we used in our tests, the 357 Magnum cartridge can produce enough energy to be marginally effective on light game out to 100 yards or so. The longer barrel of the rifle permits muzzle velocities up to 600 fps faster than those possible with 357 Magnum handguns. The muzzle energy difference between top rifle and pistol loads is an even more impressive 567 ft.-lbs. with the Hornady 38 caliber (.357" diameter) 158 grain Hollow Point.

## 38 CALIBER (.357" Dia.)

## 125 GRAIN HOLLOW POINT #3571



CARTRIDGE OVERALL LENGTH 1.590"

VELOCITY				
POWDER	1650 fps	1700 fps	1750 fps	1800 fps
BULLSEYE	7.5 gr.	7.9 gr.	8.2 gr.	8.5 gr.
UNIQUE	8.1 gr.	8.5 gr.	8.9 gr.	9.3 gr.
630	11.9 gr.	12.5 gr.	13.2 gr.	13.8 gr.
2400	13.7 gr.	14.1 gr.	14.5 gr.	14.9 gr.

VELOCITY				
POWDER	1850 fps	1900 fps	1950 fps	2000 fps
BULLSEYE	8.9 gr.			
UNIQUE	9.7 gr.	10.0 gr.		
630	14.9 gr.	15.1 gr.	15.7 gr.	16.3 gr.
2400	15.3 gr.	15.7 gr.	16.1 gr.	

\*These data may also be used with the 38 cal. 125 gr. Flat Point.

## 38 CALIBER (.357" Dia.)

## 158 GRAIN HOLLOW POINT #3575



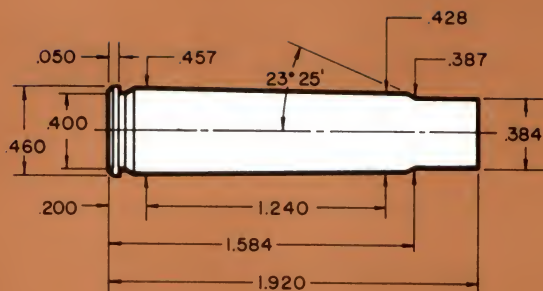
CARTRIDGE OVERALL LENGTH 1.590"

VELOCITY				
POWDER	1350 fps	1400 fps	1450 fps	1500 fps
BULLSEYE	6.3 gr.	6.6 gr.		
UNIQUE	6.9 gr.	7.4 gr.	7.9 gr.	8.4 gr.
630	10.9 gr.	11.4 gr.	11.8 gr.	12.3 gr.
2400	11.9 gr.	12.3 gr.	12.8 gr.	13.2 gr.

VELOCITY				
POWDER	1550 fps	1600 fps	1650 fps	1700 fps
BULLSEYE				
UNIQUE	8.9 gr.			
630	12.8 gr.	13.2 gr.	13.7 gr.	14.2 gr.
2400	13.6 gr.	14.0 gr.	14.5 gr.	

\*These data may also be used with the 38 cal. 158 gr. Flat Point

Indicates maximum load • use with caution



## 35 REMINGTON

**RIFLE:** MARLIN MODEL 336 SC

**BARREL:** 20", 1 in 16" TWIST

**CASE:** REMINGTON

**PRIMER:** FEDERAL 210

In 1908 Remington introduced the 35 Remington in their Model 8 semi-automatic rifle and later in their Model 14 and 141 slide action rifles. The 35 Remington is a short range, woods type hunting cartridge that is a favorite of deer hunters who hunt the crowded areas and need a short, fast handling, and effective deer rifle. The 35 Remington is superior to the 30-30 Winchester in ballistics and closely approximates the new 375 Winchester.

With the rising popularity of Handgun Silhouette shooting, the 35 Remington cartridge enjoys an added following. Thompson Center Arms Company offers their single shot Contender pistol in the venerable 35 Remington cartridge.

The following loading data will not give the same velocities in a 10" T/C barrel, but will supply a starting point and maximum loading data. Maximum loads should be approached with caution. *The 200 grain Spire Point should not be used in guns with tubular magazines, as recoil could initiate the detonation of the remaining rounds in the magazine.*



**38 CALIBER (.357" Dia.)****158 GRAIN HOLLOW POINT #3575**

CARTRIDGE OVERALL LENGTH 2.235"



POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
WIN 630	17.9 gr.	19.3 gr.	20.7 gr.	22.0 gr.	23.4 gr.	24.8 gr.
2400	19.8 gr.	21.0 gr.	22.2 gr.	23.4 gr.	24.6 gr.	25.8 gr.
H4227	22.0 gr.	23.1 gr.	24.1 gr.	25.2 gr.	26.2 gr.	27.3 gr.
IMR 3031	29.5 gr.	31.0 gr.	32.5 gr.	34.0 gr.	35.5 gr.	37.0 gr.

35 REMINGTON

**38 CALIBER (.358" Dia.)****200 GRAIN ROUND NOSE #3515**

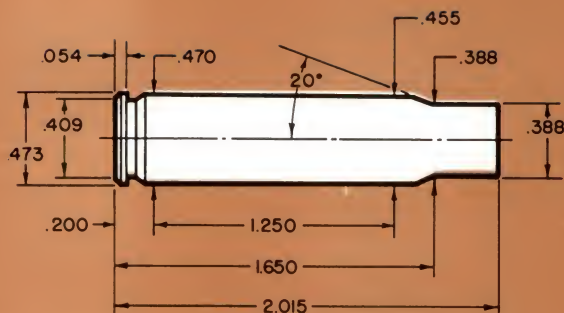
CARTRIDGE OVERALL LENGTH 2.510"



POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
RL-7	24.2 gr.	25.9 gr.	27.5 gr.	29.2 gr.	
H4198	25.5 gr.	26.6 gr.	27.7 gr.	28.8 gr.	
IMR 3031	29.9 gr.	31.4 gr.	33.0 gr.	34.5 gr.	36.0 gr.
BL-C2		34.0 gr.	35.6 gr.	37.2 gr.	38.8 gr.
H4895		34.3 gr.	35.9 gr.	37.5 gr.	39.1 gr.
IMR 4064	33.0 gr.	34.6 gr.	36.2 gr.	37.8 gr.	39.4 gr.
WIN 748	31.9 gr.	33.9 gr.	35.9 gr.	37.9 gr.	39.9 gr.
IMR 4320	32.3 gr.	34.3 gr.	36.3 gr.	38.3 gr.	40.3 gr.
H380	33.6 gr.	35.7 gr.	37.7 gr.	39.8 gr.	41.9 gr.

These data may also be used with the 35 caliber 200 gr. S.P. in guns without tubular magazines; overall length may vary.

 Indicates maximum load • use with caution



## 358 WINCHESTER

**RIFLE:** WINCHESTER MODEL 70

**BARREL:** 22", 1 in 12" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 120

The 358 Winchester and the 35 Whelen which preceded it by 36 years may be considered parallel developments, for the 358 is a necked up 308 Winchester cartridge and the 35 Whelen is a necked up 30-06. Winchester introduced its 358 in 1955 and chambered its Models 70 and 88 for the new cartridge. Ballistically superior to the older and larger 348 Winchester and far more powerful and versatile than the 35 Remington, the 358 nevertheless failed to succeed in the market and Winchester has discontinued chambering rifles for the cartridge.

While the newer 350 Remington Magnum will drive the 200 grain Hornady up to 200 fps faster than the 358 Winchester, with heavier 35 caliber bullets the 358 achieves the same top velocities with considerably less powder. Part of this may be attributed to the 3½" longer barrel of the Model 70 we used in our testing versus the 18½" barrel of the Model 600 used with the new Remington magnum. What the comparison really means is that 358 owners should not sell their rifles so they can rush out to buy the short new 350 magnum. A belted case is about the only real difference a shooter can see.

**35 CALIBER (.358" Dia.)**
**200 GRAIN ROUND NOSE #3515**

CARTRIDGE OVERALL LENGTH 2.695"



VELOCITY					
POWDER	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H4198		35.5 gr.	37.2 gr.	38.9 gr.	40.6 gr.
IMR 3031		39.5 gr.	41.3 gr.	43.1 gr.	44.9 gr.
H4895		41.9 gr.	44.1 gr.	46.4 gr.	48.7 gr.
IMR 4064		42.9 gr.	44.7 gr.	46.6 gr.	48.5 gr.
BL-C2		42.9 gr.	45.5 gr.	48.2 gr.	
IMR 4320		43.1 gr.	45.6 gr.	48.1 gr.	50.6 gr.
WIN 748	41.8 gr.	44.7 gr.	47.7 gr.	50.7 gr.	53.7 gr.
H380	43.3 gr.	46.2 gr.	49.0 gr.		

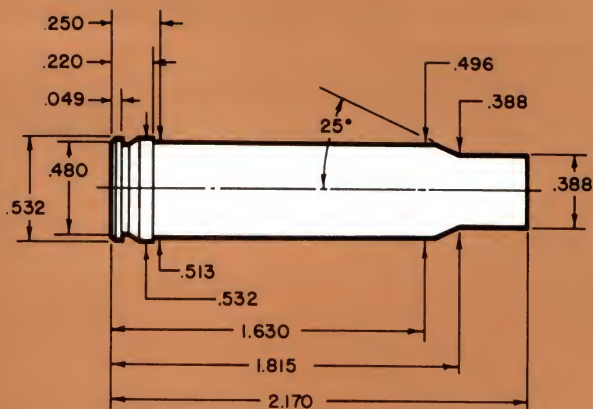
**35 CALIBER (.358" Dia.)**
**250 GRAIN ROUND NOSE #3525**

CARTRIDGE OVERALL LENGTH 2.775"



VELOCITY				
POWDER	2000 fps	2100 fps	2200 fps	2300 fps
WIN 630	28.9 gr.	30.7 gr.	32.5 gr.	
H4198	34.2 gr.	36.0 gr.	37.8 gr.	39.6 gr.
IMR 3031	37.8 gr.	39.7 gr.	41.5 gr.	
BL-C2	40.4 gr.	43.2 gr.	46.1 gr.	49.0 gr.
H4895	40.9 gr.	42.9 gr.	44.8 gr.	
WIN 748	42.1 gr.	44.4 gr.	46.7 gr.	

Indicates maximum load • use with caution



## 350 REMINGTON MAGNUM

**RIFLE: REMINGTON MODEL 600 CARBINE**

**BARREL: 18½", 1 in 16" TWIST**

**CASE: REMINGTON**

**PRIMER: FEDERAL 210**

Winchester's latest entrant in the 35 caliber field — its 358 — came out in 1955 and never got fully established as a popular hunting cartridge. Nine years later, Remington introduced its contender complete with belted head, short neck, and the magic "Magnum" in its name — the 350 Remington Magnum.

The 350 Remington Magnum was originally chambered in Remington's Model 600 rifle, an 18" barreled carbine which produced some rather hefty recoil — and failed to develop velocities comparable to the 35 Whelen when fired in longer barreled rifles. Remington's carbine has since been discontinued, and the firm chambers this cartridge currently in its Model 700 BDL.

Thirty-five caliber is excellent for many types of North American big game hunting, and the 350 Remington Magnum is suitable for nearly all — subject, of course, to some range limitations.



**35 CALIBER (.358" Dia.)****200 GRAIN ROUND NOSE #3515**

CARTRIDGE OVERALL LENGTH 2.740"

POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H4198	40.6 gr.	42.5 gr.	44.5 gr.	46.6 gr.		
IMR 3031	46.3 gr.	48.1 gr.	50.0 gr.	51.8 gr.	53.6 gr.	
IMR 4064	49.8 gr.	51.3 gr.	52.9 gr.	54.5 gr.	56.0 gr.	
H4895	49.7 gr.	51.7 gr.	53.8 gr.	55.8 gr.	57.9 gr.	
IMR 4320	51.3 gr.	52.5 gr.	54.4 gr.	56.5 gr.	58.5 gr.	60.5 gr.
H380		53.3 gr.	55.0 gr.	56.6 gr.		
WIN 760	57.5 gr.	59.3 gr.	61.2 gr.	63.0 gr.	64.8 gr.	

\*These data may also be used with the 35 cal. 200 gr. SP, though overall length may vary.

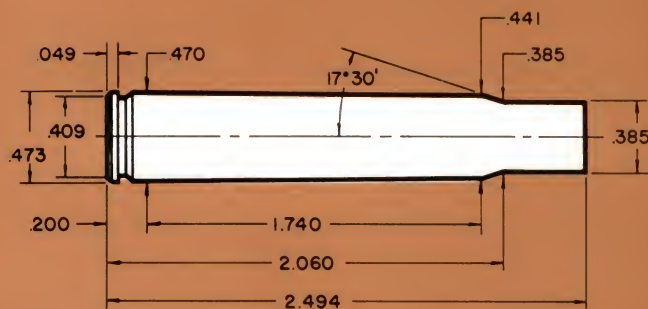
350 REMINGTON MAGNUM

**35 CALIBER (.358" Dia.)****250 GRAIN ROUND NOSE #3525**

CARTRIDGE OVERALL LENGTH 2.930"

POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 3031	40.9 gr.	42.9 gr.	45.0 gr.	47.0 gr.	49.0 gr.	51.0 gr.
H4895	43.7 gr.	45.5 gr.	47.3 gr.	49.1 gr.	51.0 gr.	
IMR 4064	43.6 gr.	45.6 gr.	47.5 gr.	49.5 gr.	51.4 gr.	
IMR 4320	45.0 gr.	47.0 gr.	49.0 gr.	50.9 gr.	53.9 gr.	54.9 gr.
WIN 760	51.6 gr.	53.2 gr.	55.0 gr.	56.6 gr.	58.3 gr.	
N204	53.0 gr.	55.2 gr.	57.4 gr.			

Indicates maximum load • use with caution



## 35 WHELEN

**RIFLE: 1903 SPRINGFIELD**

**BARREL: 22½", 1 in 16" TWIST**

**CASE: GOVERNMENT**

**PRIMER: FEDERAL 210**

Named in honor of the noted rifleman and outdoorsman, Col. Townsend Whelen, the 35 Whelen was a 1922 wildcat development of Col. Townsend Whelen as recently revealed by studies conducted by Ken Water of *Handloader*. Previously it was believed that the development of the 35 Whelen was by James Howe of Griffin & Howe.

The 35 Whelen is the 30-06 case necked to 35 caliber, and is powerful and flexible enough for all of the largest North American game. At the time of its introduction, a magnum Mauser action alone cost about the price of two complete domestic sporting rifles, and hunters wanting a rifle which would approximate the power of the big 375 H&H had to dig deep in their pockets to achieve their goal. But the 35 Whelen gave hunters a fine low cost alternative; the cartridge was short enough to work through standard length (30-06) actions, conversion to the Whelen was simple, and cases could be made easily by running 30-06 brass over a 35 caliber expander plug. Though 35 Whelen performance falls several hundred feet per second short of 375 velocities with comparable bullets, the wildcat 35 is nevertheless a potent and dependable big game cartridge.

### 35 CALIBER (.358" Dia.) 200 GRAIN ROUND NOSE #3515

CARTRIDGE OVERALL LENGTH 3.045"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
H4198	40.0 gr.	42.3 gr.	44.7 gr.		
IMR 3031	45.9 gr.	47.6 gr.	49.3 gr.	51.0 gr.	
H4895	48.8 gr.	51.0 gr.	53.1 gr.	55.3 gr.	
BL-C2	50.0 gr.	51.6 gr.	53.2 gr.	54.8 gr.	
IMR 4064	49.3 gr.	51.4 gr.	53.4 gr.	55.5 gr.	
IMR 4320		52.1 gr.	54.2 gr.	56.3 gr.	58.4 gr.
H380		52.8 gr.	55.7 gr.	58.6 gr.	

\*These data may also be used with the 35 cal. 200 gr. SP, though overall length may vary.

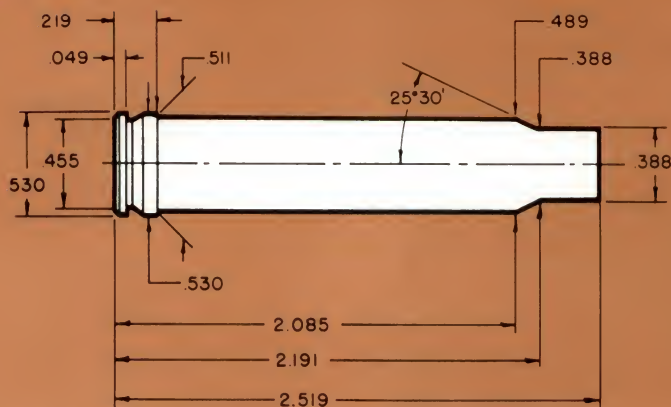
### 35 CALIBER (.358" Dia.) 250 GRAIN ROUND NOSE #3525

CARTRIDGE OVERALL LENGTH 3.255"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 3031	42.1 gr.	44.4 gr.	46.7 gr.	49.0 gr.	51.3 gr.
IMR 4064	46.4 gr.	48.2 gr.	50.1 gr.	52.0 gr.	
IMR 4320	46.0 gr.	48.2 gr.	50.4 gr.	52.6 gr.	
BL-C2		48.6 gr.	50.6 gr.	52.6 gr.	
H4895	46.8 gr.	48.8 gr.	50.7 gr.	52.7 gr.	
H380		49.4 gr.	52.5 gr.	55.6 gr.	
IMR 4350		55.6 gr.	57.8 gr.	59.9 gr.	

 Indicates maximum load • use with caution



## 358 NORMA MAGNUM

**RIFLE:** REMINGTON MODEL 700

**BARREL:** 25½", 1 in 14" TWIST

**CASE:** NORMA

**PRIMER:** RWS

Norma of Sweden has paid particular attention to the U.S. reloading market and to the American handloader as a trend maker. By providing cases for foreign military surplus rifles, the firm has helped popularize them and make them useful as sporting arms. But Norma has also taken the initiative in the American ammunition market by introducing entirely new cartridges such as the 358 Norma Magnum. In 1959, Norma announced this new and powerful cartridge and made cases and chambering specifications available for it. U.S. gunsmiths and reloaders accepted both and thereby started the 358 NM on its way. Factory chambered European rifles entered the U.S. market in 1960, and Norma ammunition for this cartridge is now available.

The 358 Norma Magnum is a short magnum which will work through standard length bolt actions such as the Model 70, the Mauser Model '98, and the Springfield. Actions with locking lugs in the rear, however, are a poor choice for use with such a powerful cartridge.

The 358 Norma Magnum comes very close to the potency of the 375 H&H Magnum. The 250 grain Hornady is an outstanding and popular bullet for this 358 magnum.



# 35 CALIBER (.358" Dia.) 200 GRAIN ROUND NOSE #3515

CARTRIDGE OVERALL LENGTH 3.110"



POWDER	VELOCITY				
	2500 fps	2600 fps	2700 fps	2800 fps	2900 fps
IMR 3031	53.2 gr.	55.7 gr.	58.2 gr.	60.7 gr.	
H4895		58.7 gr.	61.1 gr.	63.5 gr.	65.9 gr.
IMR 4064	57.4 gr.	59.7 gr.	62.0 gr.	64.3 gr.	66.5 gr.
IMR 4320		60.6 gr.	63.2 gr.	65.7 gr.	68.3 gr.
H380	59.7 gr.	62.4 gr.	65.1 gr.	67.8 gr.	
IMR 4350	66.9 gr.	68.7 gr.	70.6 gr.	72.5 gr.	74.4 gr.

\*These data may be used with the 35 Cal. 200 gr. SP, though overall length may vary.

358 NORMA MAGNUM

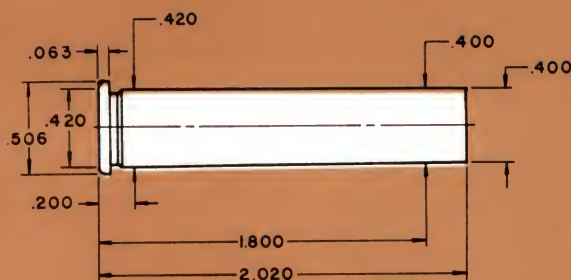
# 35 CALIBER (.358" Dia.) 250 GRAIN ROUND NOSE #3525

CARTRIDGE OVERALL LENGTH 3.280"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
IMR 3031	54.0 gr.	56.7 gr.	59.5 gr.	62.2 gr.	
H4895	55.7 gr.	58.4 gr.	61.0 gr.	63.7 gr.	66.4 gr.
IMR 4064	57.2 gr.	59.7 gr.	62.2 gr.	64.7 gr.	
IMR 4320	58.4 gr.	60.9 gr.	63.3 gr.	65.8 gr.	68.3 gr.
IMR 4350	64.3 gr.	66.7 gr.	69.1 gr.	71.5 gr.	74.0 gr.
H450	68.1 gr.	71.0 gr.	73.8 gr.	76.7 gr.	

Indicates maximum load • use with caution



## 375 WINCHESTER

**RIFLE:** WINCHESTER "BIG BORE 94"

**BARREL:** 20", 1 in 12" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 120

The 375 Winchester, new in 1978, was introduced by Winchester in a heavy duty version of their Model 94 lever action rifle. This new round, developed by Winchester, yields ballistics comparable to the 35 Remington. The 375 should be a fine choice for deer and black bear at short range and in heavy cover. The 375 Winchester case is only slightly shorter than the old 38-55 Winchester round and under no circumstances should 375 Winchester cartridges be fired in the 38-55. Working pressures for the 375 Winchester far exceed those of the 38-55.

When the 375 Winchester was introduced, the Hornady engineers designed a 220 grain Flat Point bullet expressly for the 375 Winchester and obtained a rifle for testing. During testing, 100 yard groups of 2½" were the best obtainable. This sort of grouping is all that is necessary for the short ranges at which this cartridge should be used. Reloder 7 produced the best accuracy and uniformity in our firearm and also the highest velocity.

**375 CALIBER (.375" Dia.)**

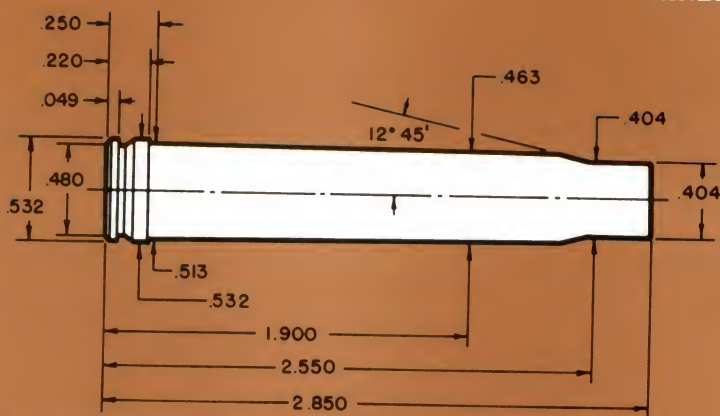
**220 GRAIN FLAT POINT #3705**

**CARTRIDGE OVERALL LENGTH 2.560"**



POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	28.0 gr.	30.1 gr.	32.2 gr.		
N200	30.1 gr.	32.1 gr.	34.0 gr.	36.0 gr.	
RL-7	31.1 gr.	32.8 gr.	34.5 gr.	36.2 gr.	38.0 gr.
IMR 3031	34.0 gr.	35.2 gr.			
H322	34.8 gr.	36.7 gr.	38.6 gr.		

*Indicates maximum load • use with caution*



## 375 H & H MAGNUM

**RIFLE: WINCHESTER MODEL 70**

**BARREL: 25", 1 in 12" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 120**

Despite the fact that the 375 H&H gained fame after its 1912 introduction as an all-around African cartridge and is indeed rather much for most North American big game, Weatherby began U.S. production of the big magnum in the 20's and Winchester brought out its Model 70 for the 375 in the late 30's. Many hunters prefer the 375 on elk, moose, and the largest bears on the continent, but it is still eminently an African cartridge and in many areas of that continent the minimum caliber for hunting the most dangerous species.

From the late 1940's on the 375 H&H lost some ground to more powerful big bore competitors from Weatherby and Winchester—and to such potent long range cartridges as the 338 Winchester and 340 Weatherby Magnums. In 1969 we introduced a 375 caliber 270 grain Spire Point bullet which will help the H&H regain ground in terms of long range performance. The new Hornady Spire Point is the most efficient 375 caliber bullet manufactured, and started off at 2600 fps can deliver almost a foot-ton of remaining energy to targets 500 yards distant.

The 375 H&H Magnum remains an excellent big game cartridge. It affords plenty of killing power, a respectable trajectory even with 300 grain Round Nose and FMJ bullets, and fine accuracy for those shooters who can manage it.



**375 CALIBER (.375" Dia.)**  
**270 GRAIN SPIRE POINT #3710**

CARTRIDGE OVERALL LENGTH 3.585"

POWDER	VELOCITY			
	2400 fps	2500 fps	2600 fps	2700 fps
IMR 3031	59.4 gr.	62.3 gr.	65.1 gr.	68.0 gr.
H4895	63.0 gr.	65.7 gr.	68.3 gr.	71.0 gr.
IMR 4064	63.4 gr.	66.1 gr.	68.8 gr.	71.5 gr.
IMR 4320	64.0 gr.	66.7 gr.	69.4 gr.	72.1 gr.
WIN 748	65.1 gr.	67.9 gr.	70.7 gr.	
IMR 4350	71.2 gr.	74.4 gr.	77.7 gr.	
WIN 760	73.3 gr.	76.2 gr.	79.2 gr.	82.1 gr.

\*These data may also be used with the 375 Cal., 270 gr. RN, though overall length may vary.

**375 CALIBER (.375" Dia.)**  
**300 GRAIN ROUND NOSE #3720**

CARTRIDGE OVERALL LENGTH 3.595"

POWDER	VELOCITY			
	2300 fps	2400 fps	2500 fps	2600 fps
IMR 3031	58.5 gr.	61.8 gr.	65.0 gr.	
H4895	62.8 gr.	65.2 gr.	67.7 gr.	
IMR 4064	63.1 gr.	65.6 gr.	68.1 gr.	
IMR 4320	63.5 gr.	66.0 gr.	68.5 gr.	
IMR 4350		73.4 gr.	76.4 gr.	79.5 gr.
WIN 760		75.6 gr.	78.8 gr.	
N204	75.9 gr.	78.6 gr.	81.3 gr.	84.0 gr.
H4831		76.7 gr.	80.7 gr.	84.8 gr.
H450		78.0 gr.	83.0 gr.	

\*These data may also be used with the 375 cal. 300 gr. FMJ.

Indicates maximum load • use with caution





# 375 CALIBER (.375" Dia.) 270 GRAIN SPIRE POINT #3710



CARTRIDGE OVERALL LENGTH 3.625"

POWDER	VELOCITY				
	2800 fps	2900 fps	3000 fps	3050 fps	3100 fps
IMR 3031	82.2 gr.	86.8 gr.			
IMR 4064	86.5 gr.	90.8 gr.			
H4895	87.2 gr.	91.2 gr.	95.2 gr.		
IMR 4320	85.8 gr.	90.6 gr.	95.4 gr.	97.8 gr.	
IMR 4350	99.2 gr.	102.1 gr.	105.0 gr.	106.4 gr.	107.9 gr.
N204	100.2 gr.	102.8 gr.	105.4 gr.	106.7 gr.	108.0 gr.
H4831	103.0 gr.	106.2 gr.	109.4 gr.	111.0 gr.	112.6 gr.
H450	102.9 gr.	106.3 gr.	109.8 gr.	111.4 gr.	113.2 gr.
NORMA MRP	106.2 gr.	108.9 gr.	111.6 gr.	112.9 gr.	114.3 gr.

These data may also be used with the 375 cal. 270 gr. RN bullet, though overall length may vary.

# 375 CALIBER (.375" Dia.) 300 GRAIN ROUND NOSE #3720

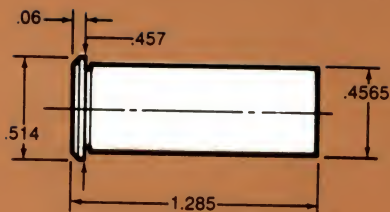


CARTRIDGE OVERALL LENGTH 3.635"

POWDER	VELOCITY				
	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps
IMR 3031	78.1 gr.	82.0 gr.	85.9 gr.		
IMR 4064	81.0 gr.	85.3 gr.	89.5 gr.		
H4895	81.0 gr.	85.3 gr.	89.5 gr.		
IMR 4320	82.1 gr.	86.7 gr.	91.4 gr.	93.7 gr.	
IMR 4350	95.1 gr.	97.9 gr.	100.6 gr.	101.9 gr.	103.3 gr.
N204	93.1 gr.	97.0 gr.	101.0 gr.	102.9 gr.	104.9 gr.
H4831	98.2 gr.	101.2 gr.	104.2 gr.	105.7 gr.	107.2 gr.
H450	97.0 gr.	100.6 gr.	104.2 gr.	106.0 gr.	107.8 gr.
NORMA MRP	100.7 gr.	104.4 gr.	108.1 gr.	109.9 gr.	111.8 gr.

These data may also be used with the 375 cal. 300 gr. FMJ bullet.

*Indicates maximum load • use with caution*



## 44 REMINGTON MAGNUM (RIFLE)

**RIFLE: RUGER CARBINE**

**BARREL: 18", 1 in 38" TWIST**

**CASE: FRONTIER**

**PRIMER: WINCHESTER 7M-111F**

The 44 Remington Magnum dates back to 1955 when it was introduced as a handgun cartridge. The cartridge was originally chambered in the heavy frame Smith and Wesson Model 29 followed a short time later by Ruger in their Super Blackhawk. Because of the popularity of having a sidearm and a rifle of the same caliber, Ruger later introduced the now popular 44 Magnum auto-loading carbine.

The light, fast handling Ruger Carbine in 44 Magnum makes a handy gun for hunting wooded areas. The following loads listed should not be reduced; any reduction may result in improper functioning of the gas operated Ruger. It is also imperative that loads be kept at near maximum charges to insure uniform results from the slower burning powders listed.

All the powders gave commendable results in our carbine, with IMR 4227 being the most uniform. The Hornady 265 grain Flat Point is the best choice for deer or black bear at short ranges, while the 200 grain Jacketed Hollow Point and 240 grain Jacketed Hollow Point are better suited for smaller game.



# 44 CALIBER (.430" Dia.) 200 GRAIN HOLLOW POINT #4410



CARTRIDGE OVERALL LENGTH 1.590"

VELOCITY					
POWDER	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
BLUE DOT	17.0 gr.	18.1 gr.	19.2 gr.	20.3 gr.	
2400	21.5 gr.	22.8 gr.	24.2 gr.		
H110			24.6 gr.	26.3 gr.	28.0 gr.
WIN 296		25.2 gr.	26.8 gr.	28.5 gr.	
IMR 4227	24.3 gr.	25.8 gr.	27.4 gr.		

# 44 CALIBER (.430" Dia.) 240 GRAIN HOLLOW POINT #4420



CARTRIDGE OVERALL LENGTH 1.610"

VELOCITY					
POWDER	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
BLUE DOT	15.7 gr.	17.1 gr.	18.5 gr.		
2400	18.5 gr.	20.0 gr.	21.5 gr.	23.0 gr.	
H110		20.5 gr.	22.0 gr.	23.5 gr.	25.0 gr.
WIN 296	20.3 gr.	21.8 gr.	23.3 gr.	24.7 gr.	
IMR 4227	21.6 gr.	23.1 gr.	24.5 gr.		

# 44 CALIBER (.430" Dia.) 265 GRAIN FLAT POINT #4300

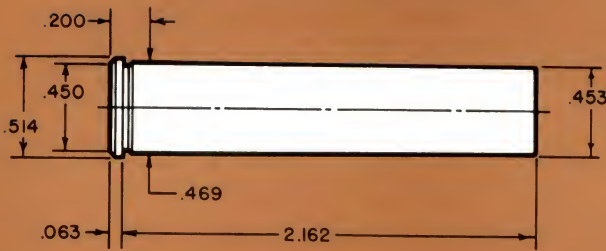


CARTRIDGE OVERALL LENGTH 1.650"

VELOCITY					
POWDER	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps
BLUE DOT	12.5 gr.	13.8 gr.	15.0 gr.	16.3 gr.	17.6 gr.
2400	16.2 gr.	17.6 gr.	19.0 gr.	20.4 gr.	
H110		18.3 gr.	19.6 gr.	20.9 gr.	22.2 gr.
WIN 296	17.7 gr.	19.1 gr.	20.6 gr.	22.0 gr.	
IMR 4227	18.9 gr.	20.3 gr.	21.8 gr.	23.3 gr.	

*Indicates maximum load • use with caution*





## 444 MARLIN

**RIFLE:** MARLIN 336

**BARREL:** 24", 1 in 38" TWIST

**CASE:** R-P

**PRIMER:** ALCAN LARGE RIFLE

The 444 Marlin is a big, cylindrical, semi-rimmed case which Remington factory loads with a 240 grain bullet to a velocity of 2400 fps. At the muzzle the 444 develops 930 fps more velocity than the 44 Remington Magnum — and over twice the energy. The 444 is a lot more cartridge than the 44 Magnum, though it is still a short to moderate range round at its best for hunting in brush. Its power makes it the equal of most North American game hunted within its effective range.

The 444 Marlin cartridge first appeared in 1964 chambered in that firm's popular Model 336 lever action. Winchester in 1958 had ceased manufacturing its Model 71 in 348 caliber, and Marlin's new offering thus became the largest caliber lever action repeater available. (Marlin bested this accomplishment in 1972 when it produced its Model 1895 in 45-70 caliber.)

In 1967 Hornady introduced a bullet expressly designed for the 444 Marlin, our 44 caliber (.430") 265 grain Flat Point. The blunt shape of this bullet is ideally suited to the 336's tubular magazine, accuracy in the lever action is highly satisfactory, and the optimum expansion characteristics of the bullet have helped it earn a deadly reputation as a game-stopper.

**44 CALIBER (.430" Dia.)**  
**240 GRAIN HOLLOW POINT #4420**



CARTRIDGE OVERALL LENGTH 2.550"

VELOCITY						
POWDER	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
WIN 630	28.6 gr.	30.7 gr.	32.7 gr.	34.8 gr.	36.9 gr.	39.0 gr.
2400	30.8 gr.	32.7 gr.	34.6 gr.	36.5 gr.	38.4 gr.	40.3 gr.
IMR 4227	33.5 gr.	35.2 gr.	36.8 gr.	38.5 gr.	40.2 gr.	41.8 gr.
IMR 4198		41.1 gr.	43.1 gr.	45.0 gr.		
N200	41.1 gr.	43.3 gr.	45.5 gr.	47.7 gr.	49.9 gr.	
H322	47.3 gr.	49.4 gr.	51.5 gr.	53.6 gr.		
H4895	47.6 gr.	50.3 gr.	53.1 gr.			

**44 CALIBER (.430" Dia.)**  
**265 GRAIN FLAT POINT #4300**

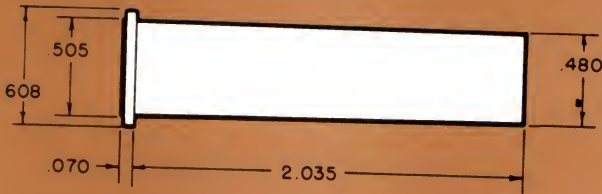


CARTRIDGE OVERALL LENGTH 2.580"

VELOCITY						
POWDER	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	35.8 gr.	37.7 gr.	39.6 gr.	41.5 gr.	43.4 gr.	45.3 gr.
N200	37.6 gr.	39.7 gr.	41.8 gr.	43.9 gr.		
IMR 3031	40.8 gr.	43.2 gr.	45.6 gr.	48.0 gr.	50.4 gr.	52.8 gr.
H322	43.3 gr.	45.4 gr.	47.5 gr.	49.6 gr.	51.7 gr.	53.8 gr.
IMR 4320		47.9 gr.	50.5 gr.	53.2 gr.	55.8 gr.	
WIN 748	44.6 gr.	47.5 gr.	50.4 gr.	53.3 gr.		
IMR 4064	46.1 gr.	48.5 gr.	50.9 gr.	53.3 gr.	57.7 gr.	
H4895	47.4 gr.	49.7 gr.	52.0 gr.	54.3 gr.		
H380		48.6 gr.	51.7 gr.	54.8 gr.		



*Indicates maximum load • use with caution*



## 45-70 (TRAP DOOR)

RIFLE: SPRINGFIELD 1873

BARREL: 29½", 1 in 23" TWIST

CASE: WINCHESTER

PRIMER: FEDERAL 210

The following data is to be used in such rifles as the 1873 Springfield "Trap Door" rifle, H&R "Shikari", 1886 Winchester, Rolling Block 45-70's, and all other rifles of similar construction. The data represented here did not exceed 25,000 c.u.p. in our pressure barrel.

For the older rifles we have included only our 300 grain Jacketed Hollow Point; this bullet is constructed to expand properly at their lower velocities. We recommend the use of slower burning powders to keep the case more nearly filled. When using Pyrodex, it is the recommendation of that firm that the case be full or slightly compressed for adequate ignition; it is for this reason that only two increments are shown.

45 CALIBER (.458" Dia.)

300 GRAIN HOLLOW POINT #4500



CARTRIDGE OVERALL LENGTH 2.550"

POWDER	VELOCITY						
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
SR 4759	25.5 gr.	27.0 gr.	28.5 gr.	30.0 gr.	31.5 gr.	33.0 gr.	
IMR 4227	27.2 gr.	28.5 gr.	29.8 gr.	31.1 gr.	32.4 gr.	33.7 gr.	
IMR 4198	32.2 gr.	33.9 gr.	35.6 gr.	37.3 gr.	39.1 gr.	40.8 gr.	42.5 gr.
RL-7	31.6 gr.	33.9 gr.	36.3 gr.	38.6 gr.	41.0 gr.	43.3 gr.	45.7 gr.
H-322			40.7 gr.	44.2 gr.	47.7 gr.	51.3 gr.	54.8 gr.
IMR 3031	40.9 gr.	43.1 gr.	45.3 gr.	47.6 gr.	49.8 gr.	52.0 gr.	
PYRODEX							
CTG.		52.1 gr.	56.4 gr.				

Indicates maximum load • use with caution





## 45-70 (1895)

**RIFLE: MARLIN 1895**

**BARREL: 22", 1 in 20" TWIST**

**CASE: WINCHESTER**

**PRIMER: FEDERAL 210**

*The following data is meant primarily for use in the Marlin Model 1895 and should not be used in antique 45-70's or antique replicas. Pressures here are held to 40,000 c.u.p. maximum. This rifle is the same basic action as that of the 444 Marlin which operates at 40,000 c.u.p.*

The marlin 45-70 is a very reliable and functional North American big game rifle. It has sufficient energy for any North American game and most African game at close range.

The 1895 is shown with the 300 grain Hollow point and the 350 grain Round Nose, but not with the 500 grain Round Nose. The 500 grain Round Nose, when loaded to function through the magazine, has the bullet seated with the cannellure below the mouth of the case, which takes up too much case volume and allows no place for crimping. A good crimp is of utmost importance in a rifle with a tubular magazine and heavy recoil.

Excellent accuracy and good uniformity were obtained with our rifle using IMR 4198 and IMR 3031. The 300 grain Hollow Point makes a good choice on deer while the 350 grain Round Nose is an excellent choice for anything from black bear to moose.



## 45 CALIBER (.458" Dia.)

## 300 GRAIN HOLLOW POINT #4500



CARTRIDGE OVERALL LENGTH 2.550"

POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
SR 4759	33.0 gr.	34.7 gr.	36.4 gr.			
IMR 4198	41.2 gr.	43.2 gr.	45.2 gr.	47.2 gr.	49.2 gr.	51.2 gr.
RL-7	39.5 gr.	42.5 gr.	45.6 gr.	48.6 gr.	51.7 gr.	54.7 gr.
IMR 3031	49.3 gr.	51.4 gr.	53.6 gr.	55.8 gr.	58.0 gr.	
H322	50.9 gr.	53.4 gr.	55.8 gr.	58.2 gr.	60.6 gr.	

45-70 (1895)

## 45 CALIBER (.458" Dia.)

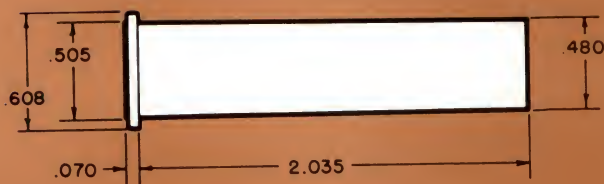
## 350 GRAIN ROUND NOSE #4502



CARTRIDGE OVERALL LENGTH 2.555"

POWDER	VELOCITY					
	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps	1900 fps
IMR 4198	36.7 gr.	38.8 gr.	40.9 gr.	42.9 gr.	45.0 gr.	47.1 gr.
RL-7	35.1 gr.	38.1 gr.	41.1 gr.	44.0 gr.	47.0 gr.	50.0 gr.
IMR 3031	43.8 gr.	46.2 gr.	48.6 gr.	51.6 gr.	53.4 gr.	55.8 gr.
H322	43.6 gr.	46.2 gr.	48.8 gr.	51.5 gr.	54.1 gr.	56.7 gr.
IMR 4895	44.7 gr.	47.2 gr.	49.6 gr.	52.0 gr.	54.5 gr.	56.9 gr.
IMR 4064	46.6 gr.	49.3 gr.	51.9 gr.	54.6 gr.	57.2 gr.	59.9 gr.

Indicates maximum load • use with caution



## 45-70 (Ruger)

**RIFLE: RUGER #1**

**BARREL: 22", 1 in 20" TWIST**

**CASE: WINCHESTER**

**PRIMER: FEDERAL 210**

*The following data are to be used only in such actions as the Ruger #1, Browning 78, Wickliffe, and 45-70's chambered on the Siamese Mauser bolt action. These data have maximum charges that develop 50,000 c.u.p., as tested in the Hornady lab. Under no circumstances should these loads be used in any action in the 25,000 c.u.p. class.*

The 45-70 has been a popular sporting round since 1873, and with the advent of strong actions like the Ruger #1, its popularity has increased along with the usefulness of the cartridge. It is impossible for the ammunition manufacturers to produce rounds which utilize the full potential of these strong actions due to numerous antiques and antique replicas that remain in circulation. However, the handloader can eke out every foot pound possible by using the correct powder-bullet combinations in his rifle, as listed here in the Hornady manual.

With the Hornady 500 grain Round Nose and IMR 3031, the Ruger #1 can produce velocities only 350 fps slower than the 458 Winchester. With this type of ballistics, the 45-70 Ruger can certainly take the largest game North America has to offer.

Should any reloader desire to use the 300 grain Hollow Point, data for the 1895 45-70 should be used.

## 45 CALIBER (.458" Dia.)

## 350 GRAIN ROUND NOSE #4502



CARTRIDGE OVERALL LENGTH 2.550"

POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
IMR 4198	42.2 gr.	44.4 gr.	46.6 gr.	48.9 gr.	51.1 gr.	53.3 gr.
RL-7	44.8 gr.	47.5 gr.	50.2 gr.	52.8 gr.	55.5 gr.	
IMR 3031	49.0 gr.	51.2 gr.	53.3 gr.	55.4 gr.	57.5 gr.	59.6 gr.
IMR 4895	51.2 gr.	54.2 gr.	57.2 gr.	60.1 gr.		
H322	52.9 gr.	55.4 gr.	57.9 gr.	60.4 gr.		
IMR 4064	55.2 gr.	57.9 gr.	60.5 gr.			

45-70 (RUGER)

## 45 CALIBER (.458" Dia.)

## 500 GRAIN ROUND NOSE #4504

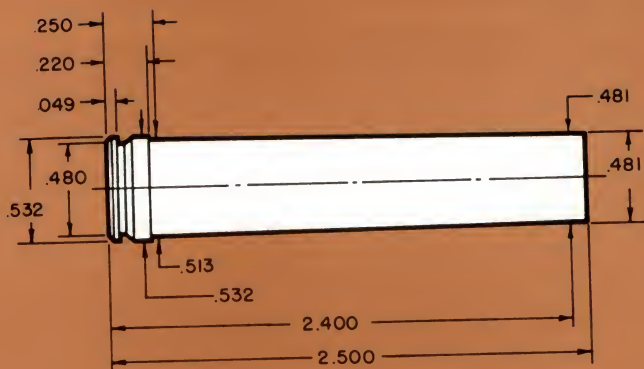


CARTRIDGE OVERALL LENGTH 2.925"

POWDER	VELOCITY				
	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps
IMR 4198		39.1 gr.	41.9 gr.	44.8 gr.	47.6 gr.
RL-7	38.4 gr.	41.5 gr.	44.5 gr.		
IMR 3031		44.1 gr.	47.1 gr.	50.1 gr.	53.1 gr.
IMR 4895	45.1 gr.	47.8 gr.	50.5 gr.	53.2 gr.	
H322	45.5 gr.	48.3 gr.	51.2 gr.		
IMR 4064	46.3 gr.	49.2 gr.	52.1 gr.	55.0 gr.	

These data may also be used with the 45 cal. 500 gr. FMJ.

Indicates maximum load • use with caution



## 458 WINCHESTER MAGNUM

**RIFLE:** WINCHESTER MODEL 70

**BARREL:** 25", 1 in 14" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 120

In 1956 Winchester introduced the 458 in their Model 70 "African", a heavier constructed version of the Model 70 which would withstand the tremendous recoil this cartridge produces. This round was intended for large and dangerous African game, but has also found favor in North America for the big bears and moose.

The Hornady 500 grain Full Metal Jacket is ideal for such game as elephant or Cape buffalo, since muzzle energies of 5000 ft. lbs. plus are obtainable. The jacket of this bullet is drawn from .075" copper-clad steel to provide the needed penetration on heavy, thick-skinned game. The 350 grain Round Nose and 500 grain Round Nose are designed for controlled expansion in thinner skinned game such as lion, bear, etc., with the 350 grain Round Nose being adequate for any North American game.

Our test rifle was exceptionally accurate for its caliber. Most powders produced good groups, with N202 and H335 performing exceptionally well. The reloader must be careful not to load charges that are less than those listed, as dangerous hangfires and large muzzle flashes can occur.



# 45 CALIBER (.458" Dia.) 350 GRAIN ROUND NOSE #4502

CARTRIDGE OVERALL LENGTH 2.950"



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2450 fps	2500 fps
IMR 4198			62.2 gr.	66.5 gr.	68.7 gr.	70.8 gr.
RL-7		61.4 gr.	64.5 gr.	67.5 gr.	69.1 gr.	
N200	62.8 gr.	65.7 gr.	68.5 gr.	71.4 gr.		
IMR 3031		67.9 gr.	71.5 gr.	75.1 gr.		
H335	70.5 gr.	73.8 gr.	77.1 gr.	80.3 gr.	82.0 gr.	
IMR 4320	70.0 gr.	73.6 gr.	77.2 gr.			
H4895		73.7 gr.	78.2 gr.			
N202	77.7 gr.	79.5 gr.	81.3 gr.			

458 WINCHESTER MAGNUM

# 45 CALIBER (.458" Dia.) 500 GRAIN ROUND NOSE #4504

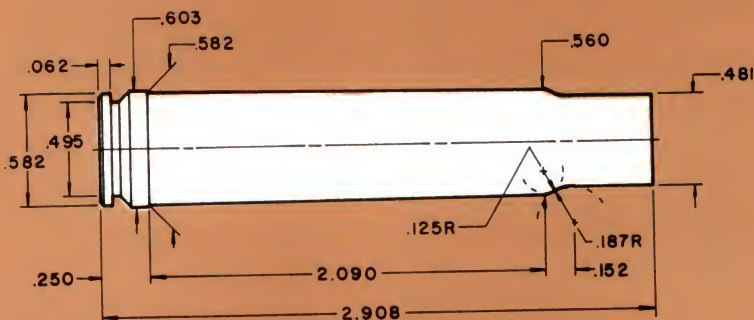
CARTRIDGE OVERALL LENGTH 3.310"



POWDER	VELOCITY				
	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps
RL-7	57.0 gr.	60.7 gr.	62.5 gr.		
IMR 4198		60.8 gr.	63.0 gr.	65.2 gr.	
IMR 3031		66.2 gr.	68.2 gr.	70.2 gr.	72.2 gr.
H335	64.6 gr.	68.9 gr.	71.0 gr.	73.2 gr.	
IMR 4064	66.4 gr.	70.6 gr.	72.8 gr.	74.9 gr.	
IMR 4320	66.4 gr.	70.8 gr.	72.9 gr.	75.1 gr.	77.3 gr.
H4895	66.4 gr.	70.9 gr.	73.1 gr.	75.3 gr.	
N201	68.2 gr.	71.8 gr.	73.6 gr.	75.4 gr.	
N202	71.0 gr.	73.9 gr.	75.3 gr.	76.7 gr.	78.1 gr.
WIN 748		74.1 gr.	76.2 gr.	78.4 gr.	80.6 gr.

These data may also be used with the 500 gr. FMJ

Indicates maximum load • use with caution



## 460 WEATHERBY MAGNUM

**RIFLE: WEATHERBY MARK V**

**BARREL: 26", 1 in 16" TWIST**

**CASE: WEATHERBY**

**PRIMER: FEDERAL 215**

Developing nearly 8000 foot pounds of muzzle energy with 500 grain bullets at 2600 fps, entitles the 460 Weatherby Magnum to the rating of the world's most powerful commercial cartridge. This ominous round was introduced by Roy Weatherby in 1958 and is based on the 378 Weatherby case necked up to 45 caliber. With its tremendous power, the 460 is more than adequate for any game animal on the earth.

Our test rifle was very accurate, with three shot groups of a minute of angle or less frequently obtained. As for those who shot the data, a twenty-five pound bag of lead shot between the shoulder and the buttstock was necessary to prevent badly bruised shoulders. Our test rifle also had a muzzle brake, which is intended to limit muzzle jump; however, with anything having as much recoil as the 460 Weatherby Magnum and considering the amount of shooting necessary, the shoulder protection was still necessary. This rifle showed a preference for H380 with the light bullet and IMR 4350 with the 500 grain Round Nose.

**Warning:** The loads recommended in this section should not be reduced. Reducing loads in a large capacity cartridge can and does lead to dangerous hangfires. Hangfires with a cartridge of this magnitude can be quite unpleasant!

**45 CALIBER (.458" Dia.)**  
**350 GRAIN ROUND NOSE #4502**

CARTRIDGE OVERALL LENGTH 3.355"



**460 WEATHERBY MAGNUM**

POWDER	VELOCITY						
	2500 fps	2600 fps	2700 fps	2800 fps	2850 fps	2900 fps	2950 fps
IMR 4198		88.8 gr.	90.5 gr.	92.3 gr.	93.2 gr.		
IMR 3031	90.6 gr.	94.1 gr.	97.7 gr.	101.2 gr.	103.0 gr.		
IMR 4064	98.0 gr.	101.2 gr.	104.5 gr.	107.7 gr.	109.4 gr.	111.0 gr.	
H4895	97.6 gr.	101.3 gr.	105.0 gr.	108.7 gr.	110.5 gr.		
H380		101.9 gr.	105.8 gr.	109.6 gr.	111.6 gr.	113.5 gr.	115.5 gr.
IMR 4320	99.3 gr.	102.7 gr.	106.3 gr.	109.8 gr.	111.6 gr.		
WIN 760	104.8 gr.	108.9 gr.	113.0 gr.	117.0 gr.	119.1 gr.	121.1 gr.	123.2 gr.
IMR 4350	110.1 gr.	115.0 gr.	119.9 gr.	124.8 gr.			
IMR 4831	115.0 gr.	119.6 gr.	124.2 gr.				
NORMA 204	118.1 gr.	122.1 gr.	126.2 gr.	130.2 gr.	132.3 gr.		
NORMA MRP	121.0 gr.	125.5 gr.	130.0 gr.				

**45 CALIBER (.458" Dia.)**  
**500 GRAIN ROUND NOSE #4504**

CARTRIDGE OVERALL LENGTH 3.710"



POWDER	VELOCITY					
	2300 fps	2400 fps	2500 fps	2550 fps	2600 fps	2650 fps
IMR 3031	89.9 gr.	94.6 gr.	99.4 gr.			
IMR 4064	94.9 gr.	99.4 gr.	103.9 gr.			
H4895	95.4 gr.	99.8 gr.	104.2 gr.	106.4 gr.		
IMR 4320	96.6 gr.	101.0 gr.	105.6 gr.	107.8 gr.		
H380	98.2 gr.	102.2 gr.	106.3 gr.	108.3 gr.		
WIN 760	102.4 gr.	107.0 gr.	111.5 gr.	113.8 gr.		
H414	106.8 gr.	110.8 gr.	114.8 gr.	116.8 gr.		
IMR 4350	104.9 gr.	110.0 gr.	115.4 gr.	118.1 gr.	120.8 gr.	123.6 gr.
IMR 4831	109.8 gr.	114.4 gr.	119.0 gr.	121.3 gr.		
NORMA 204	112.8 gr.	116.7 gr.	120.7 gr.	122.6 gr.	124.6 gr.	
NORMA MRP	116.1 gr.	120.4 gr.	124.7 gr.	126.8 gr.		

Indicates maximum load • use with caution

## NOTES



*Pistol  
Reloading  
Guide*

Basically, the reloading operation for pistol cartridges is identical to that for rifle cartridges. However, some equipment and techniques vary enough to make a step by step discussion worthwhile. The following guide is meant primarily to aid the beginning reloader.

The ensuing photo illustrates a reloading bench arranged in a neat and orderly fashion. One of the main rules of safety is a clean, uncluttered reloading bench with only those components to be used in the present operation on the bench.



Before proceeding with the following instructions for reloading, the handloader should refer to the section on the components of the cartridge for a complete understanding of the terms and procedures discussed in the following operations.

#### **OPERATION ONE: CASE INSPECTION AND CLEANING**

Cases should be sorted by brand and then inspected for split necks, enlarged primer pockets, mouths dented beyond saving, deep scratches, and other damage. The damaged case(s) should be discarded.



At this point cases should be wiped free of grit and dirt. Grit scratches cases and accelerates wear of conventional steel size dies. An increasing number of reloaders are changing to tungsten carbide sizing dies. The carbide dies, due to their hardness, help eliminate case scratching, ease the operation of sizing, and lessen the wear common to conventional steel dies.

After cleaning, a few cases should be measured to insure uniform case length. If some cases are considerably longer than others, crimping will not be uniform, resulting in irregular pressures, erratic velocities, and poor accuracy. Uniform case length is also necessary for cartridges such as the 9mm Luger and 45 ACP, as they headspace on the mouth of the case. If trimming is required, refer to Operation Three in the Rifle Reloading section.

## **OPERATION TWO: LUBRICATING AND SIZING CASES**

After cleaning, cases should be properly lubricated to facilitate the resizing operation. A lube pad/loading block combination such as the one manufactured by Pacific Tool Company works very efficiently, since several cases can be uniformly lubricated at one time. The reloader must be careful to avoid too much lubricant as an excess amount creates a messy situation.





When the cases have been lubricated, the size die should be adjusted in the press. For a proper setting, the ram should be fully extended and the die screwed into the press until the base of the die contacts the shellholder (with a carbide die, the base of the die should not quite touch the shellholder and pre-lubrication is not necessary if the cases are properly cleaned). After all adjustments have been made, all that remains is to secure the lock ring on the die body. Upon completion of resizing, the cases must be wiped free of any lube and they are then ready for expanding and depriming.

### **OPERATION THREE: NECK EXPANDING, CASE MOUTH BELLING, AND DEPRIMING**

The normal rifle reloading sequence resizes, deprimes, and expands the neck to accept a new bullet with a single die. However, the pistol reloader with straight walled cases needs two dies for the same purpose. Since the reloader has already full-length resized the case, he must next expand the neck, bell the case mouth to accept a new bullet, and remove the spent primer. This is the purpose of the #2 die.

To properly adjust this die, the reloader should bring the ram to full extension and seat the die in the press such that the base of the die nearly touches the shellholder. Next, the expander-decap assembly must be backed out and a resized case inserted in the shellholder. He should then proceed to turn in the expander-decap assembly by small increments until the case mouth receives a slight bell. Excessive bellling should be avoided as such practice over works the brass and eventually leads to split necks (the neck needs only enough flare to accept a new bullet without shaving the sides of the bullet when seated). After all cases have been expanded and deprimed, they are ready to be primed.



#### OPERATION FOUR: SEATING PRIMERS

Some reloaders prime their cases on the downstroke of the expanding and depriming operation, but we prefer to expand and deprime, remove the #2 die, and then proceed with priming. This generally speeds the process and permits cleaning of primer pockets if necessary. To prime in this manner, the reloader inserts a primer in the primer cup, inserts an unprimed case in the shellhol-

der, pushes the primer arm into the slot in the ram, and brings the case down on the primer, seating it firmly in the bottom of the primer pocket of the case. All primers should be seated to the bottom of the primer pocket with uniform pressure to insure consistent ignition. After all primers have been seated, it is a good practice to inspect the cases for any improperly seated primers.





#### **OPERATION FIVE: CHARGING THE CASES**

Powder charging is an important process in obtaining consistently accurate handloads. Since pistols require small charges of very fast powders, it is important that load variations be held to a minimum.

All powder charges could be weighed, but Pacific Tool Company makes a pistol powder measure with interchangeable powder bushings that works extremely well and consumes less time. When using this type of powder measure, the reloader must select the appropriate powder bushing from the bushing table provided with the measure which matches the charge in the Hornady manual. Several charges should be weighed with his scale as a safety precaution. If an adjustable type measure is used the measure should be correctly adjusted in conjunction with a scale — it is a common fact that powders may vary from lot to lot. When satisfied he has the right bushing, the reloader (illustration) proceeds with charging the cases. Cases may be charged individually with the powder measure secured, or the measure may be removed and a whole loading block of cases charged at one time (illustration). No matter which method is employed, uniform operation of the charge bar is important for accurate ammunition.

When all cases have been properly charged, the reloader should visually inspect for uncharged or double charged cases (the powder level can be compared while all cases are in the loading block). A double charge of a very fast burning powder can be quite hazardous to the handgun and the shooter.





## OPERATION SIX: BULLET SEATING

Improperly seated bullets can cause malfunctions due to feeding problems or incorrect chambering. The overall cartridge lengths listed in the Hornady manual will help prevent most chambering or feeding problems.

Seating bullets is a simple task with properly adjusted equipment. The reloader begins by placing an empty case in the shellholder and bringing the ram to full extension. The seating die is inserted and threaded in until the crimping shoulder contacts the mouth of the empty case. Next, the reloader replaces the empty case with a charged case and inserts a bullet. The seating stem is adjusted gradually until the correct overall length as listed in the Hornady manual is obtained. Assuming a crimp is necessary, the reloader backs out the seating stem several turns and rotates the die body in approximately .025" (about 1/3 turn of the die) to obtain a moderate to heavy crimp. Upon crimping, the car-

tridge is inspected, and if the crimp is sufficient, the reloader returns the loaded cartridge to the shellholder, fully extends the ram, sets the die body lock ring, rotates the seating stem in until it touches the seated bullet, and sets the seating stem lock ring. The die is now properly adjusted and ready to seat bullets in the remaining charged cases.

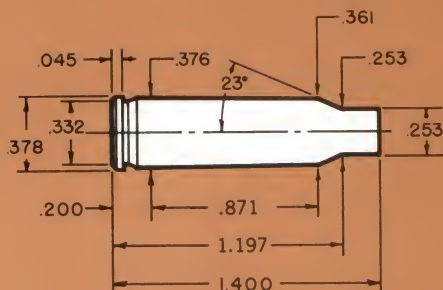
If crimping is not desired, as with the 9mm Luger and 45 ACP, the reloader adjusts the crimping portion of the die just enough to eliminate the belled mouth. With the die locked in place, seating can be completed.

After all cases have been loaded, there is one more important task to complete. A label should be placed on the box where the ammunition is stored. This label should include the components used and the date reloaded. Labels for this purpose come with each box of Hornady bullets. Careful records for future reference is a sound safety habit.





*Pistol  
Reloading  
Data*



## 221 REMINGTON FIREBALL

**RIFLE:** REMINGTON XP-100

**BARREL:** 10 $\frac{3}{4}$ ", 1 in 12" TWIST

**CASE:** R-P

**PRIMER:** R-P 7 $\frac{1}{2}$

The Fireball is a shortened version of the 222 Remington case that was introduced in the XP-100 action in 1963; the XP-100 action is a shortened and modified version of the Model 600 action. This cartridge maintains the distinction of being the "hottest", flattest shooting pistol cartridge manufactured that also has commercially available ammunition. As a varmint, the 221 is superb, with accuracy capabilities of minute-of-angle or less. Topped with a scope and loaded with Hornady SX bullets the 221 is adequate for taking varmints in excess of 150 yards.

In our test weapon, IMR 4198 gave the best overall results, followed closely by IMR 4227 and Reloader 7. It should be noted at this point that we do not recommend the use of the 60 grain Hollow Point in the 221. With the 1:12" twist and the 2500 fps maximum velocity obtainable, the long 60 grain Hollow Point does not always stabilize properly. The 60 grain Spire Point is enough shorter to stabilize, and excellent performance is on par with the rest of the 22 caliber Hornady bullets.

## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 1.840"



POWDER	VELOCITY				
	2400 fps	2500 fps	2600 fps	2700 fps	2800 fps
2400	12.8 gr.	13.3 gr.	13.9 gr.		
IMR 4227	14.5 gr.	15.1 gr.	15.7 gr.	16.3 gr.	
IMR 4198	16.8 gr.	17.4 gr.	18.0 gr.	18.6 gr.	
RL-7	17.0 gr.	17.5 gr.	18.0 gr.	18.6 gr.	19.1 gr.

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SPIRE POINT #2245

CARTRIDGE OVERALL LENGTH 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.4 gr.	14.2 gr.	14.9 gr.	15.6 gr.	16.4 gr.
IMR 4227		14.5 gr.	15.2 gr.	15.9 gr.	16.6 gr.
IMR 4198	16.3 gr.	16.8 gr.	17.3 gr.	17.8 gr.	18.3 gr.
RL-7	16.5 gr.	17.1 gr.	17.7 gr.	18.2 gr.	18.8 gr.
BL-C2	21.1 gr.	21.7 gr.	22.4 gr.	23.0 gr.	

These data may also be used with the 22 cal. 50 gr. SX bullet.

## 22 CALIBER (.224" Dia.)

### 53 GRAIN HOLLOW POINT #2250

CARTRIDGE OVERALL LENGTH 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.8 gr.	14.4 gr.	15.1 gr.	15.7 gr.	16.4 gr.
IMR 4227		14.8 gr.	15.4 gr.	16.1 gr.	
IMR 4198		16.4 gr.	17.1 gr.	17.7 gr.	18.3 gr.
RL-7	16.2 gr.	16.8 gr.	17.3 gr.	17.9 gr.	
BL-C2	20.4 gr.	21.2 gr.	22.0 gr.		

These data may also be used with the 22 cal. 52 gr. Match Boat Tail Hollow Point.

Indicates maximum load • use with caution

## 22 CALIBER (.224" Dia.) 55 GRAIN SPIRE POINT #2265

CARTRIDGE OVERALL LENGTH 1.840"



POWDER	VELOCITY				
	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
WIN 680	13.7 gr.	14.3 gr.	15.0 gr.	15.6 gr.	
IMR 4227	14.4 gr.	15.0 gr.	15.6 gr.	16.2 gr.	
IMR 4198		16.2 gr.	16.9 gr.	17.6 gr.	18.3 gr.
RL-7	16.1 gr.	16.7 gr.	17.2 gr.	17.8 gr.	
BL-C2	20.0 gr.	20.9 gr.	21.8 gr.		

These data may also be used with the 22 cal. 55 gr. SX and 55 gr. FMJ bullets.

## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT #2270

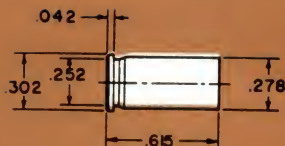
CARTRIDGE OVERALL LENGTH 1.840"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
WIN 680	12.0 gr.	12.8 gr.	13.5 gr.	14.2 gr.	14.9 gr.
IMR 4227	12.9 gr.	13.6 gr.	14.3 gr.	15.0 gr.	
IMR 4198	14.1 gr.	15.0 gr.	15.8 gr.	16.7 gr.	
RL-7	14.8 gr.	15.5 gr.	16.1 gr.	16.7 gr.	17.4 gr.
BL-C2		19.2 gr.	19.9 gr.	20.6 gr.	

 Indicates maximum load • use with caution





## 25 ACP

**PISTOL: BAUER**

**BARREL: 2", 1 in 16" Twist**

**CASE: FRONTIER**

**PRIMER: FEDERAL 100**

This diminutive 25 caliber cartridge was introduced in the U.S. in 1908 in a Browning-designed Colt. The 25 Auto is popular as a self-defense weapon because of its small size; its power rates similar to that of the 22 rimfire.

At the time of this writing Hornady makes the only 25 caliber, .251" diameter bullet available to the reloader. In addition, Pacific Tool Co. provides reloading dies, while Frontier Cartridge Corporation offers loaded ammunition.

During our testing Hercules Red Dot provided the best uniformity and accuracy.

**25 CALIBER (.251" Dia.)**

**50 GRAIN FULL METAL JACKET #3545**

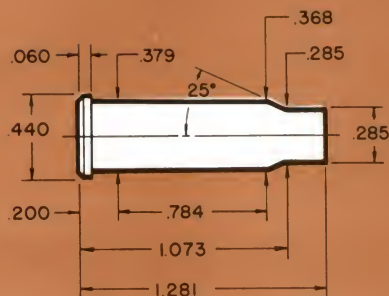
CARTRIDGE OVERALL LENGTH .900"



POWDER	VELOCITY				
	650 fps	700 fps	750 fps	800 fps	850 fps
NORMA R-1	.7 gr.	.8 gr.	.9 gr.	1.0 gr.	
HI-SKOR 700-X	.8 gr.	.8 gr.	.9 gr.	1.0 gr.	
RED DOT	.8 gr.	1.0 gr.	1.1 gr.	1.2 gr.	
BULLSEYE	1.0 gr.	1.1 gr.	1.1 gr.	1.2 gr.	
HP-38	1.0 gr.	1.0 gr.	1.1 gr.	1.2 gr.	1.3 gr.
WIN 231	1.2 gr.	1.3 gr.	1.4 gr.	1.5 gr.	1.6 gr.

Charges are rounded to the nearest tenth grain. Due to the light charges used in this cartridge some adjacent velocity increments show the same charge. Due to variation it is possible either velocity may result.

*Indicates maximum load • use with caution*



## 256 WINCHESTER MAGNUM

**PISTOL: RUGER HAWKEYE**

**BARREL: 8½", 1 in 14" TWIST**

**CASE: WINCHESTER**

**PRIMER: WINCHESTER 116**

In the last decade and a half arms makers have discovered and exploited a very substantial "Collector's Market" for new firearms of all types: replicas, commemoratives, special editions. Judging from the volume of such issues, making firearms to look at instead of shoot must be a profitable business.

Then, of course, there's the phenomenon of the "instant collector's item" — manufacturing a firearm which simply doesn't sell and is promptly (and quietly) discontinued. Sturm, Ruger & Company didn't intend to get into such business with its Hawkeye pistol, but that's what happened.

Introduced in 1961 in response to the clamor for an improved long-range cartridge/pistol combination, the 256 Winchester Magnum is based on a necked down 357 Magnum revolver case. Ruger introduced this new cartridge in a unique new pistol, the 256 Hawkeye, a single shot handgun featuring a pivoting breech block to handle the pressures developed by the 256 cartridge. With the chamber integral with the barrel, the full velocity potential of the round was realized.

While the Ruger system worked, it didn't sell — and the Hawkeye was withdrawn from the market in just a few years. Winchester's new cartridge didn't fare much better when offered in factory rifles (Marlin's Model 62: see the Rifle Data section for loads) though it could develop almost 600 fps more velocity in the longer barrels. The 256 is now available in the popular Thompson Center Contender and the Merrill Single Shot.

## 25 CALIBER (.257" Dia.)

### 60 GRAIN SOFT POINT #2510

CARTRIDGE OVERALL LENGTH 1.560"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
UNIQUE	8.0 gr.	8.6 gr.	9.2 gr.	9.8 gr.		
HERCO	8.4 gr.	9.1 gr.	9.8 gr.	10.5 gr.		
2400				13.8 gr.	14.6 gr.	15.4 gr.
H4227			14.5 gr.	15.2 gr.	16.0 gr.	16.8 gr.

## 25 CALIBER (.257" Dia.)

### 75 GRAIN HOLLOW POINT #2520

CARTRIDGE OVERALL LENGTH 1.740"



POWDER	VELOCITY					
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
UNIQUE	6.7 gr.	7.3 gr.	7.9 gr.	8.6 gr.	9.2 gr.	
HERCO	7.0 gr.	7.6 gr.	8.2 gr.	8.8 gr.		
AL-8	7.9 gr.	8.7 gr.	9.5 gr.	10.3 gr.	11.1 gr.	
H110		9.5 gr.	10.3 gr.	11.1 gr.		
2400				12.5 gr.	13.1 gr.	13.7 gr.
H4227			12.0 gr.	13.2 gr.	14.5 gr.	

## 25 CALIBER (.257" Dia.)

### 87 GRAIN SPIRE POINT #2530

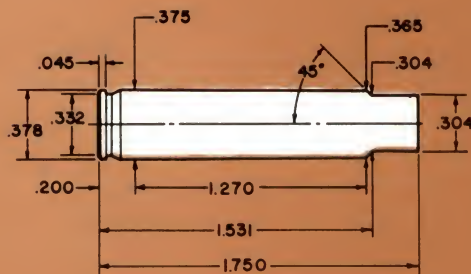
CARTRIDGE OVERALL LENGTH 1.825"



POWDER	VELOCITY					
	1300 fps	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps
UNIQUE	5.4 gr.	6.0 gr.	6.7 gr.	7.4 gr.	8.0 gr.	
HERCO	5.7 gr.	6.3 gr.	6.9 gr.	7.6 gr.	8.2 gr.	
AL-8			8.0 gr.	8.7 gr.	9.5 gr.	10.2 gr.
H110		8.4 gr.	9.0 gr.	9.6 gr.	10.3 gr.	
2400	8.0 gr.	8.7 gr.	9.4 gr.	10.1 gr.	10.8 gr.	11.5 gr.
H4227				10.9 gr.	11.9 gr.	12.9 gr.
H4198		12.0 gr.	12.9 gr.	13.8 gr.	14.6 gr.	

Indicates maximum load • use with caution





## 7x45mm INGRAM (7x223 IMPROVED)

**PISTOL:** REMINGTON XP-100

**BARREL:** 14.5", 1 in 10" TWIST

**CASE:** FRONTIER REFORMED

**PRIMER:** REMINGTON 7½

The 7x45 Ingram is based on a 223 case necked up to 7mm with a 45 degree shoulder and less body taper than its parent cartridge case.

Metallic Silhouette Shooting has become a very popular sport in recent years and this wildcat cartridge as developed by Dave Ingram is one of the results of the shooters' demands for flat shooting unlimited cartridges. Adequacy of the cartridge on the distant 200 meter Rams is good, with few targets failing to topple.

This cartridge is quite efficient; it provides good velocity from a short barrel with small charges of powder. During our testing all powders listed gave good results, while H322 and IMR 4895 provided the best uniformity and accuracy.

These data may also be used for the 7mm TCU, with a 150 to 200 fps drop in velocity from the standard 10" barrel. The only significant difference in the two cartridges is a change of 5 degrees in the shoulder angle — the 7mm TCU having a 40 degree shoulder.



**7mm CALIBER (.284" Dia.)**  
**120 GRAIN HOLLOW POINT #2815**

CARTRIDGE OVERALL LENGTH 2.600"



POWDER	VELOCITY						
	2000 fps	2100 fps	2200 fps	2250 fps	2300 fps	2350 fps	2400 fps
RL-7	20.4 gr.	21.5 gr.	22.6 gr.	23.1 gr.			
H322	23.5 gr.	24.5 gr.	25.6 gr.	26.1 gr.	26.6 gr.	27.1 gr.	
IMR 3031	24.9 gr.	25.8 gr.	26.7 gr.	27.2 gr.	27.6 gr.		
WIN 748			28.7 gr.	29.3 gr.	30.0 gr.	30.6 gr.	31.2 gr.
IMR 4895	26.6 gr.	27.9 gr.	29.1 gr.	29.7 gr.	30.4 gr.		
BL-C2		29.6 gr.	31.1 gr.	31.8 gr.	32.5 gr.		

These data may also be used with the 7mm 120 gr. SP bullet

**7mm CALIBER (.284" Dia.)**  
**139 GRAIN SPIRE POINT #2820**

CARTRIDGE OVERALL LENGTH 2.685"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2150 fps	2200 fps	2250 fps
RL-7	20.2 gr.	21.6 gr.				
H-322	23.5 gr.	24.5 gr.	25.6 gr.	26.1 gr.	26.6 gr.	
IMR 3031	24.4 gr.	25.4 gr.	26.3 gr.	26.7 gr.	27.2 gr.	27.7 gr.
IMR 4895	26.1 gr.	27.3 gr.	28.5 gr.	29.1 gr.	29.7 gr.	
WIN 748		27.2 gr.	28.6 gr.	29.3 gr.	30.0 gr.	30.6 gr.
BL-C2	27.9 gr.	29.2 gr.	30.6 gr.	31.2 gr.	31.9 gr.	

**7mm CALIBER (.284" Dia.)**  
**154 GRAIN SPIRE POINT #2830**

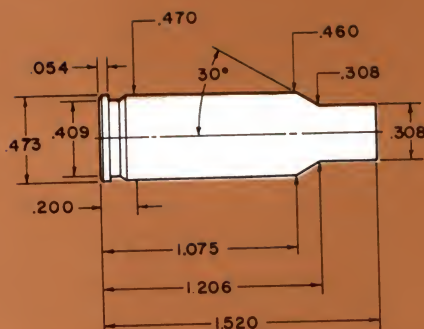
CARTRIDGE OVERALL LENGTH 2.675"



POWDER	VELOCITY					
	1800 fps	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps
H-322	22.0 gr.	23.2 gr.	24.4 gr.	25.0 gr.		
IMR 3031	23.0 gr.	24.1 gr.	25.2 gr.	25.7 gr.	26.2 gr.	
WIN 748		25.7 gr.	27.1 gr.	27.8 gr.	28.4 gr.	29.1 gr.
IMR 4895	25.0 gr.	26.2 gr.	27.4 gr.	28.0 gr.	28.6 gr.	
BL-C2	26.1 gr.	27.5 gr.	28.9 gr.	29.6 gr.	30.3 gr.	31.0 gr.

Indicates maximum load • use with caution

**7x45mm INGRAM (7x223 IMPROVED)**



## 7mm BR REMINGTON

**PISTOL:** REMINGTON XP-100

**BARREL:** 15", 1 in 10" TWIST

**CASE:** REMINGTON BR

**PRIMER:** REMINGTON 7½

Metallic silhouette shooting has grown substantially in a short period of time. Remington realized the need for a commercial "unlimited" gun and in 1980 introduced the 7mm BR Remington in their XP-100. This cartridge case has been used by bench rest people in both 22 caliber and 6mm chamberings. The cartridge is based on a necked down 308 case with a small rifle primer pocket, shortened to a length of 1.520" with a shoulder angle of 30°.

Remington offers match quality 308 cases for forming that incorporate the small primer pocket. These cases have thinner walls which aid the reforming procedure. Cases are best formed using two steps: a form die that moves the shoulder back, but does not change the neck size, and a file and trim die that completes the forming operation. Finally, cases should be full length sized.

Via appearance, the 7mm Ingram seems to have less case capacity by a substantial margin, but in truth the usable difference is about three per cent. Our 7mm Ingram achieved greater velocities than our 7mm BR, and primary reasons relate to the leades of the two firearms. The 7mm Ingram had a significantly longer leade which allowed bullets to be seated farther out of the case; this factor lowers pressures and allows the use of more powder for greater velocity.

The 7mm BR is an excellent choice for the silhouette shooter; efficient and effective use of small charges of powder give substantial enough velocities for the 200 meter rams. Best results were achieved with Winchester 748 during our testing.

7mm (.284" Dia.)

120 GRAIN HOLLOW POINT #2815

CARTRIDGE OVERALL LENGTH 2.250"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2250 fps	2300 fps	2350 fps
H322	24.7 gr.	25.9 gr.	27.0 gr.	27.6 gr.	28.2 gr.	
IMR 3031	26.2 gr.	27.3 gr.	28.4 gr.	28.9 gr.	29.5 gr.	30.0 gr.
IMR 4895	27.6 gr.	28.9 gr.	30.3 gr.	30.9 gr.	31.6 gr.	
WIN 748		29.2 gr.	30.6 gr.	31.2 gr.	31.9 gr.	32.6 gr.
BL-C2	29.8 gr.	31.2 gr.	32.6 gr.	33.2 gr.	33.9 gr.	

7mm (.284" Dia.)

139 GRAIN SPIRE POINT #2820

CARTRIDGE OVERALL LENGTH 2.330"



POWDER	VELOCITY					
	1900 fps	2000 fps	2050 fps	2100 fps	2150 fps	2200 fps
H322	24.0 gr.	25.2 gr.	25.8 gr.	26.4 gr.	26.9 gr.	
IMR 3031	25.4 gr.	26.5 gr.	27.0 gr.	27.6 gr.	28.1 gr.	
IMR 4895	26.8 gr.	28.0 gr.	28.7 gr.	29.3 gr.	29.9 gr.	
WIN 748	27.2 gr.	28.4 gr.	29.0 gr.	29.6 gr.	30.2 gr.	30.8 gr.
BL-C2	28.6 gr.	30.0 gr.	30.7 gr.	31.4 gr.		

7mm (.284" Dia.)

154 GRAIN SPIRE POINT #2830

CARTRIDGE OVERALL LENGTH 2.320"



POWDER	VELOCITY					
	1800 fps	1900 fps	1950 fps	2000 fps	2050 fps	2100 fps
H322	23.1 gr.	23.9 gr.				
IMR 3031	23.8 gr.	25.0 gr.	25.5 gr.	26.1 gr.	26.7 gr.	
IMR 4895	25.5 gr.	26.9 gr.	27.6 gr.	28.2 gr.		
WIN 748		26.9 gr.	27.6 gr.	28.3 gr.	29.0 gr.	29.7 gr.
BL-C2	27.7 gr.	28.9 gr.	29.5 gr.	30.0 gr.	30.6 gr.	

Indicates maximum load • use with caution

7mm (.284" Dia.)

**162 GRAIN BOAT TAIL  
HOLLOW POINT #2840**

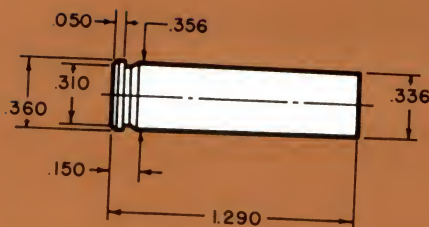


CARTRIDGE OVERALL LENGTH 2.375"

POWDER	VELOCITY					
	1700 fps	1800 fps	1900 fps	1950 fps	2000 fps	2050 fps
H322	21.6 gr.	22.7 gr.	23.9 gr.	24.5 gr.		
IMR 3031	22.7 gr.	23.7 gr.	24.8 gr.	25.4 gr.	25.9 gr.	
IMR 4895	23.7 gr.	25.2 gr.	26.6 gr.	27.3 gr.	28.0 gr.	
WIN 748		25.6 gr.	26.9 gr.	27.6 gr.	28.2 gr.	28.9 gr.
BL-C2		26.9 gr.	28.3 gr.	29.1 gr.	29.8 gr.	30.6 gr.

7mm BR REMINGTON





## 30 M1 CARBINE (PISTOL)

**PISTOL:** RUGER BLACKHAWK

**BARREL:** 7½", 1 in 20" TWIST

**CASE:** MILITARY

**PRIMER:** WINCHESTER 6½

The 30 M1 Carbine easily ranks within the top twenty most frequently reloaded cartridges. Such popularity is difficult to explain in terms of the performance characteristics of the 30 M1. The 32 Winchester Self Loading cartridge from which it was developed was considered obsolete as long as fifty years ago; and the 30 M1, even when shot from a rifle, is still a marginal performer on game.

Many excellent commercial cartridges presented in this handbook never enjoyed widespread popularity because of the firearms chambered for them. The 30 M1 Carbine, no landmark development in the history of cartridge design, owes its appeal to the easy handling semi-automatic military carbine for which it was developed in 1940. The U.S. military reckoned one on the eve of WWII that many of its ground troops would be better off hitting something with the light, quick shooting 30 M1 Carbine than hitting nothing at all with the potent 45 caliber semi-auto sidearm they might otherwise have been issued.

Now, ironically, the cartridge developed as an alternative to the 45 ACP is itself a pistol cartridge. Ruger in 1971 began chambering its heavy framed Blackhawk for the 30 M1 Carbine cartridge. Fanciers of the Carbine can now enjoy a sidearm companion to it.

# 30 CALIBER (.308" Dia.) 110 GRAIN ROUND NOSE #3015



CARTRIDGE OVERALL LENGTH 1.680"

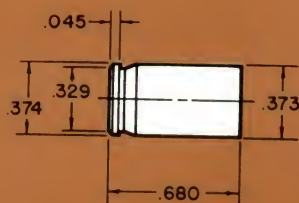
POWDER	VELOCITY			
	1050 fps	1100 fps	1150 fps	1200 fps
H110	9.3 gr.	9.8 gr.	10.3 gr.	10.8 gr.
2400	9.6 gr.	10.2 gr.	10.7 gr.	11.3 gr.

POWDER	VELOCITY			
	1250 fps	1300 fps	1350 fps	1400 fps
H110	11.3 gr.	11.8 gr.	12.3 gr.	12.8 gr.
2400	11.9 gr.	12.5 gr.	13.1 gr.	13.7 gr.

These data may also be used with the 30 caliber 110 gr. FMJ.



*Indicates maximum load • use with caution*



## 380 AUTOMATIC (9mm KURZ)

**PISTOL:** WALTHER PPK/s

**BARREL:** 3¾", 1 in 16" TWIST

**CASE:** WINCHESTER

**PRIMER:** FEDERAL 100

The 380 Auto is a fine 9mm cartridge that serves as the official military and police service cartridge for many countries. It is regarded in the U.S. as an adequate defense and back up cartridge. Much of the popularity of the round can be credited to the many different manufacturers that chamber it. In the U.S., such firms as Indian Arms, Sterling Arms, and O.M.C. manufacture the 380 Auto with a host of European manufacturers also chambering the round.

Hornady makes two 9mm bullets that work very well in the 380; the 90 grain Jacketed Hollow Point and the 100 grain Full Metal Jacket. The 380 has sufficient power for hunting small game such as rabbits, but the firearms for which it is chambered are generally not accurate enough for such use; most of these firearms are constructed for self-defense, where a high degree of accuracy is not necessary.

All powders listed performed adequately, with Winchester 231 giving the best overall results.

9mm (.355" Dia.)

90 GRAIN HOLLOW POINT #3550



CARTRIDGE OVERALL LENGTH .955"

POWDER	VELOCITY					
	800 fps	850 fps	900 fps	950 fps	1000 fps	1050 fps
NORMA R-1	2.2 gr.	2.4 gr.	2.5 gr.	2.7 gr.	2.8 gr.	3.0 gr.
HI-SKOR 700-X	2.5 gr.	2.6 gr.	2.8 gr.	2.9 gr.	3.1 gr.	3.3 gr.
RED DOT	2.6 gr.	2.8 gr.	2.9 gr.	3.1 gr.	3.3 gr.	
BULLSEYE	2.7 gr.	3.0 gr.	3.3 gr.	3.5 gr.	3.8 gr.	
GREEN DOT	2.9 gr.	3.1 gr.	3.4 gr.	3.6 gr.	3.8 gr.	
WIN 231	3.3 gr.	3.5 gr.	3.7 gr.	3.8 gr.	4.0 gr.	
HERCO	3.7 gr.	4.0 gr.	4.3 gr.	4.7 gr.		
UNIQUE	3.8 gr.	4.0 gr.	4.3 gr.	4.5 gr.	4.8 gr.	
HS-5	4.2 gr.	4.5 gr.	4.7 gr.	5.0 gr.		

9mm (.355" Dia.)

100 GRAIN FULL METAL JACKET  
#3552

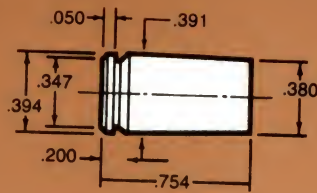


CARTRIDGE OVERALL LENGTH .980"

POWDER	VELOCITY					
	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
NORMA R-1	2.3 gr.	2.4 gr.	2.5 gr.	2.7 gr.	2.8 gr.	
HI-SKOR 700-X	2.4 gr.	2.5 gr.	2.7 gr.	2.8 gr.	2.9 gr.	3.1 gr.
RED DOT	2.5 gr.	2.7 gr.	2.8 gr.	3.0 gr.		
BULLSEYE	2.6 gr.	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.6 gr.
WIN 231	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.5 gr.	3.7 gr.
GREEN DOT	2.8 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.6 gr.	
UNIQUE	3.4 gr.	3.6 gr.	3.9 gr.	4.1 gr.	4.4 gr.	
HERCO	3.5 gr.	3.8 gr.	4.0 gr.	4.2 gr.	4.4 gr.	4.6 gr.
HS-5	4.0 gr.	4.2 gr.	4.4 gr.	4.6 gr.	4.8 gr.	5.0 gr.

Indicates maximum load • use with caution





## 9mm LUGER

**PISTOL: S & W MODEL 39**

**BARREL: 4", 1 in 10" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 100**

The 9mm Luger is the most widely chambered military pistol cartridge in the world. Introduced in 1902 by George Luger in his Luger Pistol and dubbed the 9mm Parabellum, this cartridge was adopted by the German Armed Forces just six years later. The cartridge has also seen extensive use in submachine guns.

The 9mm Luger is economical and easy to reload. With the ending of World War II, a great number of military surplus semi-autos were sold in the U.S., which also enhanced popularity of the round in this country. Eventually, the surplus ammunition ran out, and the need for commercial ammunition and reloading supplies developed.

Powders that worked exceptionally well in our test weapon were Hercules Unique, Winchester 231, and Hercules Herco. Unique contributed the best accuracy with the highest velocity of all the powders tested with the 90, 100, and 115 grain bullets. Blue Dot gave the best velocity and performance with the 124 grain Full Metal Jacket. Note: When reloading for the 9mm, care must be taken that little or no crimp be used, since the 9mm headspaces on the mouth of the case.

9mm (.355" Dia.)

90 GRAIN HOLLOW POINT #3550



CARTRIDGE OVERALL LENGTH 1.080"

POWDER	VELOCITY							
	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps
HI-SKOR 700-X			4.0 gr.	4.3 gr.	4.6 gr.			
NORMA R-1	4.0 gr.	4.2 gr.	4.4 gr.					
BULLSEYE	4.4 gr.	4.6 gr.	4.9 gr.	5.2 gr.	5.4 gr.	5.7 gr.		
RED DOT	4.1 gr.	4.5 gr.	4.8 gr.	5.1 gr.	5.5 gr.			
SR 7625	4.3 gr.	4.6 gr.	4.9 gr.	5.2 gr.				
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.		
UNIQUE	5.5 gr.	5.8 gr.	6.1 gr.	6.4 gr.	6.9 gr.	7.4 gr.	7.9 gr.	
HS-6	6.7 gr.	7.0 gr.	7.3 gr.	7.6 gr.	7.9 gr.			
HERCO		7.2 gr.	7.4 gr.	7.7 gr.	8.0 gr.			
BLUE DOT	8.0 gr.	8.4 gr.	8.7 gr.	9.1 gr.	9.5 gr.	9.8 gr.		

9mm (.355" Dia.)

100 GRAIN FULL METAL JACKET  
#3552



CARTRIDGE OVERALL LENGTH 1.105"

POWDER	VELOCITY					
	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
RED DOT	4.5 gr.	4.8 gr.	5.1 gr.			
BULLSEYE	4.6 gr.	4.8 gr.	5.0 gr.	5.3 gr.	5.5 gr.	
WIN 231	4.9 gr.	5.2 gr.	5.6 gr.	5.9 gr.		
UNIQUE	5.7 gr.	6.0 gr.	6.3 gr.	6.6 gr.	6.9 gr.	7.1 gr.
HERCO	6.2 gr.	6.5 gr.	6.8 gr.	7.2 gr.	7.5 gr.	7.8 gr.
HS-6	7.1 gr.	7.3 gr.	7.6 gr.			
BLUE DOT	8.0 gr.	8.3 gr.	8.6 gr.	8.9 gr.	9.2 gr.	

Indicates maximum load • use with caution

9mm (.355" Dia.)

115 GRAIN HOLLOW POINT #3554

CARTRIDGE OVERALL LENGTH 1.105"



9mm LUGER

POWDER	VELOCITY					
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
RED DOT	3.9 gr.	4.2 gr.	4.5 gr.			
BULLSEYE	3.9 gr.	4.2 gr.	4.4 gr.	4.7 gr.	5.0 gr.	
WIN 231	4.3 gr.	4.6 gr.	4.9 gr.	5.2 gr.	5.5 gr.	
UNIQUE	4.9 gr.	5.2 gr.	5.6 gr.	6.0 gr.	6.3 gr.	
HERCO	5.7 gr.	6.1 gr.	6.4 gr.	6.8 gr.	7.1 gr.	
HS-6	6.0 gr.	6.4 gr.	6.7 gr.	7.0 gr.	7.3 gr.	
BLUE DOT		7.2 gr.	7.6 gr.	8.0 gr.	8.5 gr.	8.9 gr.

9mm (.355" Dia.)

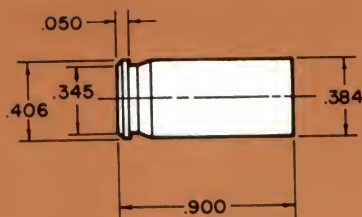
124 GRAIN FULL METAL JACKET  
#3556

CARTRIDGE OVERALL LENGTH 1.040"



POWDER	VELOCITY					
	900 fps	950 fps	1000 fps	1050 fps	1100 fps	1150 fps
BULLSEYE	3.3 gr.	3.5 gr.	3.8 gr.	4.1 gr.	4.4 gr.	
WIN 231		3.9 gr.	4.3 gr.	4.8 gr.	5.2 gr.	
UNIQUE	3.7 gr.	4.1 gr.	4.4 gr.	4.7 gr.	5.1 gr.	
HERCO	4.4 gr.	4.6 gr.	4.9 gr.	5.1 gr.	5.3 gr.	
HS-6	5.0 gr.	5.3 gr.	5.7 gr.	6.0 gr.	6.3 gr.	
BLUE DOT	6.0 gr.	6.4 gr.	6.7 gr.	7.0 gr.	7.3 gr.	7.7 gr.
WIN 630			8.0 gr.	8.6 gr.	9.3 gr.	

Indicates maximum load • use with caution



## 38 SUPER AUTOMATIC

**PISTOL: COLT 38 SUPER AUTOMATIC**

**BARREL: 5", 1 in 16" TWIST**

**CASE: WINCHESTER**

**PRIMER: ALCAN SMALL PISTOL**

The speed and power of the 38 Super have won it a substantial following since its introduction in 1929 as an improved version of Colt's older 38 ACP cartridge. It was designed for a modified Government Model automatic pistol, a much stronger firearm than the auto chambered for the 38 ACP.

Of American handgun manufacturers, only Colt has produced pistols for the 38 Super, though there are a number of European automatics made for this cartridge. The 38 Super was also at one time chambered in the Thompson submachinegun.

Factory ammo, loaded as it is with 130 grain metal jacketed bullets, does not permit the 38 Super Auto to live up to its full sporting potential. The three Hornady Bullets we recommend for reloading the cartridge are all hollow points with excellent expansion characteristics. Fired at 38 Super velocities they pack a very effective wallop for hunting small game.

Under no circumstances should 38 Super factory ammo or top equivalent reloads be fired in weapons chambered for the older 38 ACP.



# 38 CALIBER (.357" Dia.)

## 110 GRAIN HOLLOW POINT #3570



CARTRIDGE OVERALL LENGTH 1.100"

POWDER	VELOCITY					
	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
HI-SKOR 700X		4.4 gr.	4.7 gr.	5.0 gr.	5.2 gr.	5.4 gr.
BULLSEYE	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.
UNIQUE	5.4 gr.	5.8 gr.	6.1 gr.	6.4 gr.	6.7 gr.	7.1 gr.

# 9mm (.355" Dia.)

## 115 GRAIN HOLLOW POINT #3554



CARTRIDGE OVERALL LENGTH 1.115"

POWDER	VELOCITY					
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
RED DOT	4.3 gr.	4.6 gr.	4.9 gr.	5.2 gr.	5.5 gr.	
BULLSEYE	4.4 gr.	4.7 gr.	5.0 gr.	5.2 gr.	5.5 gr.	5.8 gr.
UNIQUE	5.4 gr.	5.7 gr.	6.0 gr.	6.3 gr.	6.6 gr.	6.9 gr.

# 38 CALIBER (.357" Dia.)

## 125 GRAIN HOLLOW POINT #3571

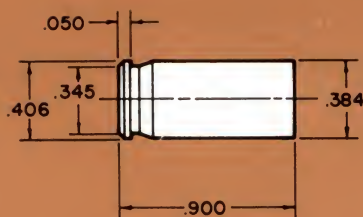


CARTRIDGE OVERALL LENGTH 1.060"

POWDER	VELOCITY					
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps
BULLSEYE	4.1 gr.	4.4 gr.	4.7 gr.	5.0 gr.		
RED DOT	4.2 gr.	4.5 gr.	4.7 gr.	5.0 gr.	5.2 gr.	
UNIQUE	5.2 gr.	5.4 gr.	5.7 gr.	5.9 gr.	6.2 gr.	6.5 gr.
HERCO	5.6 gr.	5.9 gr.	6.2 gr.	6.5 gr.	6.8 gr.	

These data may also be used with the 38 cal. 125 gr. FP and the 9 mm 124 gr. FP bullets.

Indicates maximum load • use with caution



## 38 ACP

**PISTOL:** COLT MODEL 1902

**BARREL:** 6", 1 in 16" TWIST

**CASE:** WINCHESTER

**PRIMER:** ALCAN SMALL PISTOL

The 38 Automatic Colt Pistol is yet another example of the fruitful collaboration between Colt and John Browning. Developed as a potential military service pistol, the 38 ACP first appeared in 1900 in a model which could fire eight rounds on full automatic. Though faster and more powerful than the 38 Long Colt which served as the Army's official sidearm from 1892 to 1911, the 38 ACP eventually lost out in the design competition when the military opted for 45 caliber as the minimum for its service handguns.

The 38 ACP became obsolete in 1929 when Colt introduced the more powerful 38 Super Automatic, an improved version of the 38 ACP loaded to much higher pressures. The cartridges are identical in appearance, but the Super version is dangerous if fired in handguns designed for the original cartridge.

Factory ammunition for the 38 ACP is loaded with 130 grain bullets to muzzle velocity of 1040 fps. With the light weight Hornady 110 grain Hollow Point it is possible to speed things up to a full 1250 fps. In terms of power the 38 ACP is about the equivalent of the 9mm Luger cartridge.

# 38 CALIBER (.357" Dia.) 110 GRAIN HOLLOW POINT #3570

CARTRIDGE OVERALL LENGTH 1.100"



POWDER	VELOCITY			
	1100 fps	1150 fps	1200 fps	1250 fps
HI-SKOR 700X		4.4 gr.	4.7 gr.	5.0 gr.
BULLSEYE	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.
UNIQUE	5.4 gr.	5.8 gr.	6.1 gr.	6.4 gr.

38 ACP

# 9mm (.355" Dia.) 115 GRAIN HOLLOW POINT #3554

CARTRIDGE OVERALL LENGTH 1.115"



POWDER	VELOCITY			
	1000 fps	1050 fps	1100 fps	1150 fps
RED DOT	4.0 gr.	4.3 gr.	4.6 gr.	4.9 gr.
BULLSEYE	4.2 gr.	4.4 gr.	4.7 gr.	5.0 gr.
UNIQUE	5.1 gr.	5.4 gr.	5.7 gr.	6.0 gr.

# 38 CALIBER (.357" Dia.) 125 GRAIN HOLLOW POINT #3571

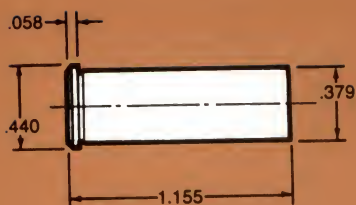
CARTRIDGE OVERALL LENGTH 1.060"



POWDER	VELOCITY		
	1000 fps	1050 fps	1100 fps
BULLSEYE	4.1 gr.	4.4 gr.	4.7 gr.
RED DOT	4.2 gr.	4.5 gr.	4.7 gr.
UNIQUE	5.2 gr.	5.4 gr.	5.7 gr.
HERCO	5.6 gr.	5.9 gr.	6.2 gr.

These data may also be used with the 38 Cal. 125 gr. FP Bullet

Indicates maximum load • use with caution



## 38 SPECIAL

**PISTOL: S & W MODEL 15**

**BARREL: 4", 1 in 18¾" TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 100**

In 1902 the 38 Special was introduced by Smith and Wesson in their Military and Police Model revolver. Since that time, the 38 Special has become the world's most reloaded centerfire cartridge. It is the most popular sidearm used by law enforcement agencies in the U.S., and because of its popularity, the 38 is chambered in nearly all revolvers and even the Thompson/Center Contender.

Moreover, the versatility of the 38 Special is to the handgunner, what the 308 Winchester is to the rifleman. The 38 Special can be used for everything from self-defense to plinking to small game hunting to target shooting, with excellent results.

To compliment the 38 Special, Hornady offers 10 choices of bullets (four lead bullets and six jacketed bullets) that fulfill the 38 Special's potential.

The 148 HBWC is the most accurate target bullet. Wadcutters are not suitable for high velocity loads. For best results in target shooting, loads from 750 to 800 fps give optimum performance. Maximum loads listed with an asterisk yield +P pressures. Some powders do not show +P loads because the next increment would yield higher than +P pressures. Our test weapon produced its best groups using Bullseye and Unique, with the highest velocities obtained from HS-6. The 158 grain Jacketed Hollow Point data may be used with the 160 grain Full Metal Jacket.



# 38 CALIBER (.357" Dia.)

## 110 GRAIN HOLLOW POINT #3570



CARTRIDGE OVERALL LENGTH 1.455"

POWDER	VELOCITY					
	950 fps	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps
NORMA R-1	4.1 gr.	4.4 gr.	4.7 gr.	* 4.9 gr.		
HI-SKOR 700-X	4.2 gr.	4.5 gr.	4.7 gr.	* 4.9 gr.		
BULLSEYE	4.5 gr.	4.8 gr.	* 5.1 gr.	* 5.4 gr.		
RED DOT	4.5 gr.	4.8 gr.	* 5.2 gr.	* 5.5 gr.		
WIN 231	5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.	* 6.5 gr.	
UNIQUE	5.6 gr.	6.1 gr.	6.5 gr.	* 7.0 gr.		
HERCO	6.0 gr.	6.4 gr.	6.8 gr.	7.2 gr.	7.6 gr.	7.9 gr.
HS-5	7.1 gr.	7.5 gr.	8.0 gr.	8.4 gr.	* 8.8 gr.	
HS-6	7.3 gr.	7.7 gr.	8.0 gr.	8.4 gr.	8.8 gr.	
WIN 630	10.0 gr.	10.6 gr.	* 11.2 gr.			

\* = + P Loads

# 38 CALIBER (.357" Dia.)

## 125 GRAIN HOLLOW POINT #3571



CARTRIDGE OVERALL LENGTH 1.455"

POWDER	VELOCITY					
	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps
NORMA R-1	3.8 gr.	* 4.0 gr.	* 4.2 gr.			
HI-SKOR 700-X	3.9 gr.	4.1 gr.	* 4.4 gr.			
BULLSEYE	4.1 gr.	4.4 gr.	* 4.6 gr.			
RED DOT	4.1 gr.	4.4 gr.	4.7 gr.	* 5.0 gr.		
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.	* 5.6 gr.		
UNIQUE	5.2 gr.	5.5 gr.	5.8 gr.	6.1 gr.		
HERCO	5.6 gr.	6.0 gr.	6.4 gr.	6.8 gr.	7.1 gr.	* 7.5 gr.
HS-5	6.4 gr.	6.8 gr.	7.2 gr.	7.6 gr.	* 8.0 gr.	
HS-6	6.8 gr.	7.2 gr.	7.5 gr.	7.8 gr.	* 8.2 gr.	* 8.5 gr.
WIN 630	8.8 gr.	9.4 gr.	10.0 gr.	* 10.6 gr.	* 11.2 gr.	

These data may also be used with the 38 cal. 125 gr. FP bullet.

\* = + P Loads

Indicates maximum load • use with caution

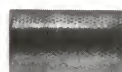
**38 CALIBER (.357" Dia.)****158 GRAIN HOLLOW POINT #3575**

CARTRIDGE OVERALL LENGTH 1.455"

POWDER	VELOCITY					
	650 fps	700 fps	750 fps	800 fps	850 fps	900 fps
NORMA R-I	3.1 gr.	3.3 gr.	*3.5 gr.	*3.7 gr.		
HI-SKOR 700-X	3.1 gr.	3.4 gr.	3.6 gr.			
BULLSEYE	3.3 gr.	3.6 gr.	3.8 gr.	*4.1 gr.		
RED DOT	3.3 gr.	3.6 gr.	3.8 gr.	*4.1 gr.	*4.3 gr.	
WIN 231	3.7 gr.	4.0 gr.	4.4 gr.	*4.8 gr.	*5.1 gr.	
UNIQUE	4.1 gr.	4.4 gr.	4.7 gr.	5.0 gr.	*5.3 gr.	
HERCO	4.4 gr.	4.7 gr.	5.0 gr.	*5.2 gr.	*5.5 gr.	
HS-5	4.9 gr.	5.2 gr.	5.6 gr.	5.9 gr.	*6.3 gr.	*6.6 gr.
HS-6	5.3 gr.	5.6 gr.	5.9 gr.	6.3 gr.	6.6 gr.	*6.9 gr.
WIN 630	6.6 gr.	7.1 gr.	7.6 gr.	8.1 gr.	*8.6 gr.	*9.1 gr.

These data may also be used with the 38 cal. 158 gr. FP bullet and 160 gr. FMJ.

\* = + P Loads

**38 CALIBER (.358" Dia.)****148 GRAIN HOLLOW BASE  
WADCUTTER #3582**

CARTRIDGE OVERALL LENGTH 1.165"

POWDER	VELOCITY					
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
NORMA R-1	2.4 gr.	2.6 gr.	2.9 gr.	3.1 gr.	3.3 gr.	
HI-SKOR 700-X	2.4 gr.	2.6 gr.	2.8 gr.	3.1 gr.	3.3 gr.	3.5 gr.
RED DOT	2.4 gr.	2.7 gr.	2.9 gr.	3.2 gr.	3.5 gr.	
BULLSEYE	2.5 gr.	2.7 gr.	3.0 gr.	3.2 gr.	3.4 gr.	3.7 gr.
WIN 231	3.0 gr.	3.3 gr.	3.5 gr.	3.8 gr.	4.0 gr.	4.2 gr.
UNIQUE	3.2 gr.	3.4 gr.	3.6 gr.	3.9 gr.	4.1 gr.	

These data may also be used with the 38 cal. 148 gr. BB Wadcutter.

 Indicates maximum load • use with caution

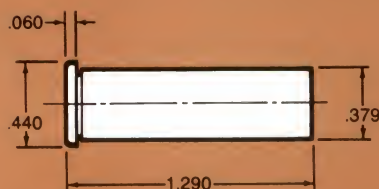
**38 CALIBER (.358" Dia.)****158 GRAIN LEAD  
ROUND NOSE #3586**

CARTRIDGE OVERALL LENGTH 1.475"

38 SPECIAL

POWDER	VELOCITY						
	650 fps	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
NORMA R-1	2.5 gr.	2.8 gr.	3.1 gr.				
HI-SKOR 700-X	2.6 gr.	2.8 gr.	3.1 gr.	3.3 gr.	3.5 gr.		
BULLSEYE	2.6 gr.	2.9 gr.	3.2 gr.	3.6 gr.			
RED DOT	2.6 gr.	2.9 gr.	3.1 gr.	3.4 gr.	3.6 gr.	3.9 gr.	
WIN 231	3.0 gr.	3.4 gr.	3.7 gr.	4.0 gr.	4.4 gr.		
UNIQUE	3.4 gr.	3.7 gr.	4.0 gr.	4.3 gr.	4.6 gr.	4.8 gr.	
HERCO	3.6 gr.	3.9 gr.	4.2 gr.	4.5 gr.	4.9 gr.		
HS-5		4.6 gr.	4.9 gr.	5.3 gr.	5.6 gr.	5.9 gr.	
HS-6		4.8 gr.	5.2 gr.	5.5 gr.	5.9 gr.	6.2 gr.	6.6 gr.
WIN 630		6.5 gr.	6.9 gr.	7.3 gr.	7.7 gr.	8.1 gr.	

These data may also be used with the 38 cal. 158 gr. LSWC.



## 357 MAGNUM

**PISTOL: S & W MODEL 27**

**BARREL: 8 $\frac{3}{8}$ " , 1 in 18 $\frac{3}{4}$ " TWIST**

**CASE: FRONTIER**

**PRIMER: FEDERAL 200**

The 357 Magnum was first introduced in 1935 by Smith and Wesson with the intention of improving on the 38 Special round for hunting and law enforcement. The 357 case is approximately .12" longer than the 38 Special and operates at considerably higher pressure, delivering as much as three times the energy of the 38 Special. This versatile magnum round makes a superb law enforcement cartridge and is sufficient for hunting small game to deer at moderate ranges.

Lead bullets make good small game and target rounds; however, velocities should not exceed 1100 fps, as undersirable leading of the barrel can occur in just a few rounds. Also, no loads are listed for the 148 grain wadcutters since they are primarily target bullets and should not be fired at velocities exceeding 900 fps. For reloading 148 grain wadcutters use 38 Special data.

Many powders produced excellent results with the Hornady jacketed bullets. These powders include Blue Dot, Winchester 630, HS-7, and R123, with Winchester 630 yielding the best accuracy. Unique provided the best performance with the lead bullets.



## 38 CALIBER (.357" Dia.)

## 110 GRAIN HOLLOW POINT #3570



CARTRIDGE OVERALL LENGTH 1.590"

POWDER	VELOCITY						
	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
BLUE DOT	12.0 gr.	12.6 gr.	13.1 gr.	13.6 gr.	14.2 gr.	14.7 gr.	
HS-7	13.8 gr.	14.4 gr.	14.9 gr.	15.4 gr.	15.9 gr.	16.4 gr.	
WIN 630	15.7 gr.	16.4 gr.	17.1 gr.	17.8 gr.	18.5 gr.		
2400	16.5 gr.	17.7 gr.	18.9 gr.				
NORMA R-123	18.7 gr.	19.1 gr.	19.4 gr.	19.8 gr.			
WIN 296	20.8 gr.	21.3 gr.	21.9 gr.	22.4 gr.	23.0 gr.	23.6 gr.	24.1 gr.

## 38 CALIBER (.357" Dia.)

## 125 GRAIN HOLLOW POINT #3571



CARTRIDGE OVERALL LENGTH 1.590"

POWDER	VELOCITY						
	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
BLUE DOT	10.4 gr.	11.1 gr.	11.7 gr.	12.4 gr.	13.0 gr.	13.7 gr.	
HS-7	12.4 gr.	12.9 gr.	13.4 gr.	14.0 gr.	14.5 gr.	15.0 gr.	
WIN 630	14.4 gr.	14.8 gr.	15.3 gr.	15.8 gr.	16.3 gr.	16.7 gr.	17.2 gr.
2400	13.8 gr.	14.7 gr.	15.5 gr.	16.4 gr.	17.3 gr.	18.2 gr.	
NORMA R-123	15.8 gr.	16.5 gr.	17.2 gr.	17.9 gr.	18.6 gr.	19.3 gr.	
H-110	17.4 gr.	18.1 gr.	18.8 gr.	19.4 gr.	20.1 gr.	20.8 gr.	
IMR 4227	17.9 gr.	18.6 gr.	19.3 gr.	20.1 gr.	20.8 gr.		
WIN 296	18.0 gr.	18.5 gr.	19.0 gr.	19.5 gr.	20.0 gr.	20.5 gr.	21.0 gr.

These data may also be used with the 38 cal. 125 gr. FP bullet.

 Indicates maximum load • use with caution

# 38 CALIBER (.357" Dia.)

## 158 GRAIN HOLLOW POINT #3575



CARTRIDGE OVERALL LENGTH 1.590"

POWDER	VELOCITY						
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
BLUE DOT	9.2 gr.	9.6 gr.	10.0 gr.	10.4 gr.	10.8 gr.	11.3 gr.	11.7 gr.
HS-7	10.5 gr.	11.0 gr.	11.5 gr.	11.9 gr.	12.4 gr.	12.9 gr.	
WIN 630	12.5 gr.	12.8 gr.	13.2 gr.	13.5 gr.	13.8 gr.	14.2 gr.	
2400	11.5 gr.	12.2 gr.	12.8 gr.	13.5 gr.	14.1 gr.	14.8 gr.	
NORMA R-123	12.6 gr.	13.0 gr.	13.5 gr.	14.0 gr.	14.5 gr.	15.0 gr.	
H-110	12.1 gr.	13.0 gr.	13.9 gr.	14.7 gr.	15.6 gr.	16.5 gr.	
WIN 296	14.1 gr.	14.6 gr.	15.1 gr.	15.5 gr.	16.0 gr.	16.5 gr.	17.0 gr.
IMR 4227	14.0 gr.	14.8 gr.	15.5 gr.	16.3 gr.	17.1 gr.		

These data may also be used with the 38 cal. 158 gr. FP bullet.

# 38 CALIBER (.357" Dia.)

## 160 GRAIN FULL METAL JACKET (Flat Point) #3579



CARTRIDGE OVERALL LENGTH 1.580"

POWDER	VELOCITY						
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
BLUE DOT			9.8 gr.	10.2 gr.	10.6 gr.	11.0 gr.	11.4 gr.
HS-7	10.2 gr.	10.6 gr.	11.0 gr.	11.4 gr.	11.8 gr.	12.2 gr.	12.6 gr.
WIN 630			12.1 gr.	12.7 gr.	13.3 gr.	14.0 gr.	
2400	11.3 gr.	11.9 gr.	12.6 gr.	13.2 gr.	13.9 gr.	14.5 gr.	
R-123	12.3 gr.	12.7 gr.	13.2 gr.	13.6 gr.	14.0 gr.	14.4 gr.	14.8 gr.
H-110	10.9 gr.	11.9 gr.	12.9 gr.	13.9 gr.	14.9 gr.	15.9 gr.	
WIN 296	13.4 gr.	13.9 gr.	14.5 gr.	15.0 gr.	15.5 gr.	16.1 gr.	16.6 gr.
IMR 4227	13.5 gr.	14.2 gr.	15.0 gr.	15.8 gr.	16.5 gr.		

Indicates maximum load • use with caution

**38 CALIBER (.358" Dia.)****158 GRAIN LEAD ROUND NOSE  
#3586**

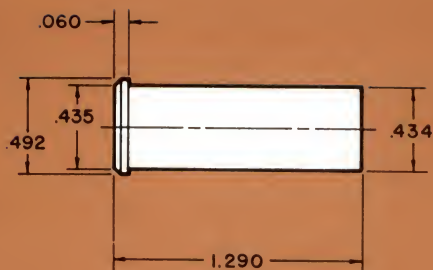
CARTRIDGE OVERALL LENGTH 1.590"

**VELOCITY**

POWDER	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps
SR 7625	4.2 gr.	4.5 gr.	4.9 gr.	5.2 gr.	5.5 gr.	5.8 gr.
GREEN DOT	4.2 gr.	4.5 gr.	4.9 gr.	5.3 gr.	5.7 gr.	6.1 gr.
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.	5.8 gr.	6.1 gr.	6.4 gr.
UNIQUE	4.7 gr.	5.1 gr.	5.4 gr.	5.8 gr.	6.2 gr.	6.5 gr.
SR 4756	4.9 gr.	5.2 gr.	5.6 gr.	6.0 gr.	6.4 gr.	6.7 gr.
HS-6	6.1 gr.	6.6 gr.	7.0 gr.	7.4 gr.	7.8 gr.	8.2 gr.

These data may also be used with the 38 Cal. 158 gr. LSWC.

**357 MAGNUM**



## 41 MAGNUM

**PISTOL:** S & W MODEL 57

**BARREL:** 6", 1 in 18 $\frac{3}{4}$ " TWIST

**CASE:** R-P

**PRIMER:** FEDERAL 150

Historically, the 41 Magnum came along in 1964, developed by Smith and Wesson and chambered in their Model 57 revolver. The 41 was originally designed to fill the gap between the 357 Magnum and the 44 Magnum for law enforcement use. The 41 Magnum does exactly that, it supplies increased power over the 357 with more tolerable recoil than the 44. However, its acceptance has not been widespread; instead of gaining a captivated law enforcement audience, its basic support is from the hunting fraternity, where the 41 supplies all the power needed for hunting deer, or even black bear.

In testing the 41 Magnum, we found that recoil was non-offensive, even with full power loads, and that accuracy was more than adequate. Our Model 57 pushed the Hornady 210 grain Jacketed Hollow Point at 1450 fps, creating nearly one thousand foot pounds of muzzle energy. Best accuracy and uniformity were obtained using Blue Dot and Norma R-123.



# 41 CALIBER (.410" Dia.)

## 210 GRAIN HOLLOW POINT #4100



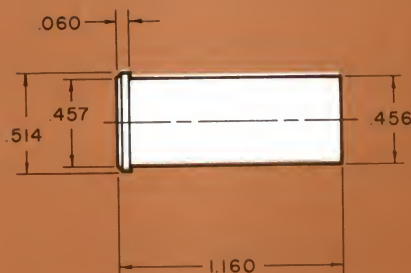
CARTRIDGE OVERALL LENGTH 1.580"

41 MAGNUM

POWDER	VELOCITY				
	1000 fps	1050 fps	1100 fps	1150 fps	1200 fps
BULLSEYE	7.6 gr.	8.0 gr.	8.5 gr.	9.0 gr.	
UNIQUE	9.0 gr.	9.4 gr.	9.9 gr.	10.3 gr.	10.8 gr.
AL-5	9.9 gr.	10.5 gr.	11.1 gr.	11.6 gr.	12.2 gr.
BLUE DOT	10.9 gr.	11.4 gr.	12.0 gr.	12.6 gr.	13.2 gr.
WIN 630	13.0 gr.	13.8 gr.	14.6 gr.	15.4 gr.	16.3 gr.
2400	14.4 gr.	15.2 gr.	16.0 gr.	16.8 gr.	17.6 gr.
NORMA R-123	15.3 gr.	16.0 gr.	16.7 gr.	17.4 gr.	18.1 gr.
H110					18.4 gr.
WIN 296	15.2 gr.	16.2 gr.	17.3 gr.	18.4 gr.	19.5 gr.
IMR 4227	15.8 gr.	17.0 gr.	18.2 gr.	19.3 gr.	20.5 gr.

POWDER	VELOCITY				
	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
BULLSEYE					
UNIQUE					
AL-5	12.8 gr.	13.4 gr.			
BLUE DOT	13.8 gr.	14.4 gr.			
WIN 630	17.1 gr.	17.9 gr.	18.7 gr.	19.5 gr.	
2400	18.4 gr.	19.2 gr.	20.0 gr.		
NORMA R-123	18.8 gr.				
H110	19.3 gr.	20.2 gr.	21.0 gr.	21.9 gr.	22.8 gr.
WIN 296	20.6 gr.	21.6 gr.	22.7 gr.		
IMR 4227					

Indicates maximum load • use with caution



## 44 SPECIAL

**PISTOL: CHARTER ARMS**

**BARREL: 3", 1 in 18" TWIST**

**CASE: WINCHESTER WESTERN**

**PRIMER: FEDERAL 150**

Introduced by Smith and Wesson in 1907, the 44 Special was developed to improve on its black powder predecessor, the 44 Russian, a big bore target cartridge. The 44 Special case was longer than the 44 Russian and could more easily handle the new, bulkier smokeless powder. With the development of the 44 Magnum, the 44 Special rapidly lost popularity; lamentably, no longer are the large frame Colt and Smith & Wesson revolvers available; in fact, the only revolver now chambered for the 44 Special is the Charter Arms five-shot Bulldog, a pistol designed basically for self-defense. The 44 Special has more power than the 38's without the recoil of the big magnums.

When comparing the 44 Magnum and 44 Special, the 44 Magnum operates at 40,000 c.u.p. maximum, and the 44 Special works at only 14,000 c.u.p., a substantial difference. Because of the low pressure levels of the 44 Special, only the 44 caliber lead bullet is shown. Velocities at safe pressures with jacketed bullets are too slow to yield acceptable expansion.

Best accuracy and uniformity in our test pistol were obtained with Hodgdon's HS-6 powder.

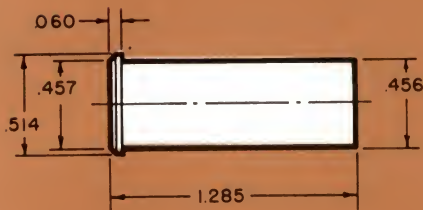
**44 CALIBER (.430" Dia.)**  
**240 GRAIN LEAD**  
**SEMI-WADCUTTER #4430**



CARTRIDGE OVERALL LENGTH 1.500"

POWDER	VELOCITY				
	650 fps	700 fps	750 fps	800 fps	850 fps
BULLSEYE	4.0 gr.	4.4 gr.	4.7 gr.	5.1 gr.	
WIN 231	4.6 gr.	5.1 gr.	5.6 gr.	6.1 gr.	6.6 gr.
UNIQUE	4.7 gr.	5.3 gr.	5.8 gr.	6.4 gr.	
SR 4756	6.1 gr.	6.4 gr.	6.7 gr.	7.1 gr.	
HS-6	6.6 gr.	7.1 gr.	7.6 gr.	8.1 gr.	8.6 gr.
WIN 630	8.4 gr.	9.2 gr.	10.0 gr.	10.8 gr.	
2400		10.0 gr.	10.7 gr.	11.3 gr.	12.0 gr.

**44 SPECIAL**



## 44 REMINGTON MAGNUM PISTOL

**PISTOL:** RUGER SUPER BLACKHAWK

**BARREL:** 7½", 1 in 20" TWIST

**CASE:** FRONTIER

**PRIMER:** WINCHESTER 7M-111F

The 44 Remington Magnum is the most powerful commercial handgun cartridge available today. It was developed jointly in 1955 by Smith and Wesson and Remington. A great deal of credit for its development can be given to Elmer Keith. Since its introduction in 1955, the 44 Magnum has been chambered by numerous manufacturers and has even been chambered in rifles such as the Ruger semi-auto carbine.

Because of the power of this cartridge, recoil and muzzle blast are substantial. It is for this reason that not all handgunners can handle the 44 Magnum. The 44 Magnum is effective on deer, black bear, elk, and other large species. It also makes a fearsome law enforcement weapon for those with the ability to master the recoil and muzzle blast.

During testing, our Ruger performed exceptionally well with Blue Dot and Winchester 296 using Hornady 200 and 240 grain Jacketed Hollow Points. With the Hornady 265 grain Flat Point, best accuracy and uniformity was obtained with Winchester 296 and IMR 4227. For those shooters who are searching for practice loads and small game loads, 8.0 grains of Hercules Unique and the Hornady 240 grain Semi-Wadcutter make an accurate and efficient combination.



**44 CALIBER (.430" Dia.)**
**200 GRAIN HOLLOW POINT #4410**

**CARTRIDGE OVERALL LENGTH 1.590"**

POWDER	VELOCITY							
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
UNIQUE	12.1 gr.	12.6 gr.	13.1 gr.	13.7 gr.	14.2 gr.	14.8 gr.		
BLUE DOT	16.6 gr.	17.3 gr.	18.0 gr.	18.8 gr.	19.5 gr.	20.2 gr.	20.9 gr.	
WIN 630	18.2 gr.	19.1 gr.	20.0 gr.	21.0 gr.	21.9 gr.	22.8 gr.	23.7 gr.	
2400	20.4 gr.	21.2 gr.	22.0 gr.	22.9 gr.	23.7 gr.	24.5 gr.		
NORMA R-123	20.8 gr.	21.5 gr.	22.3 gr.	23.0 gr.	23.8 gr.	24.5 gr.	25.3 gr.	26.0 gr.
H110	23.1 gr.	23.8 gr.	24.5 gr.	25.3 gr.	26.0 gr.	26.8 gr.	27.5 gr.	28.2 gr.
WIN 296	23.9 gr.	24.6 gr.	25.2 gr.	25.9 gr.	26.5 gr.	27.2 gr.	27.9 gr.	28.5 gr.
IMR 4227	24.2 gr.	24.9 gr.	25.6 gr.	26.3 gr.	27.1 gr.	27.8 gr.	28.5 gr.	

**44 CALIBER (.430" Dia.)**
**240 GRAIN HOLLOW POINT #4420**

**CARTRIDGE OVERALL LENGTH 1.610"**

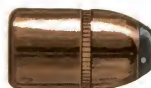
POWDER	VELOCITY						
	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps
UNIQUE	11.2 gr.	11.7 gr.	12.2 gr.	12.7 gr.	13.1 gr.		
BLUE DOT	15.2 gr.	15.9 gr.	16.7 gr.	17.5 gr.	18.2 gr.	19.0 gr.	
WIN 630		16.7 gr.	18.1 gr.	19.5 gr.	20.9 gr.		
2400	18.9 gr.	19.6 gr.	20.3 gr.	21.0 gr.	21.7 gr.	22.4 gr.	
NORMA R-123	19.7 gr.	20.2 gr.	20.7 gr.	21.2 gr.			
H110	20.9 gr.	21.6 gr.	22.3 gr.	23.0 gr.	23.7 gr.	24.4 gr.	25.0 gr.
WIN 296	21.5 gr.	22.2 gr.	22.9 gr.	23.6 gr.	24.2 gr.	24.9 gr.	
IMR 4227	22.2 gr.	22.9 gr.	23.7 gr.	24.4 gr.	25.1 gr.		

These data may also be used with the 44 cal. 240 gr. FMJ bullet.

Indicates maximum load • use with caution

## 44 CALIBER (.430" Dia.)

### 265 GRAIN FLAT POINT #4300



CARTRIDGE OVERALL LENGTH 1.610"

POWDER	VELOCITY						
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
UNIQUE	10.3 gr.	10.8 gr.	11.3 gr.	11.8 gr.	12.3 gr.	12.8 gr.	
BLUE DOT	14.2 gr.	14.8 gr.	15.5 gr.	16.1 gr.	16.7 gr.	17.3 gr.	
WIN 630	16.0 gr.	16.9 gr.	17.8 gr.	18.7 gr.	19.6 gr.		
2400	17.6 gr.	18.3 gr.	19.0 gr.	19.7 gr.	20.4 gr.	21.0 gr.	
H110	18.7 gr.	19.4 gr.	20.1 gr.	20.8 gr.	21.5 gr.	22.1 gr.	
WIN 296	19.8 gr.	20.4 gr.	21.1 gr.	21.7 gr.	22.4 gr.	23.0 gr.	
IMR 4227	20.6 gr.	21.3 gr.	21.9 gr.	22.5 gr.	23.2 gr.	23.8 gr.	24.4 gr.

## 44 CALIBER (.430" Dia.)

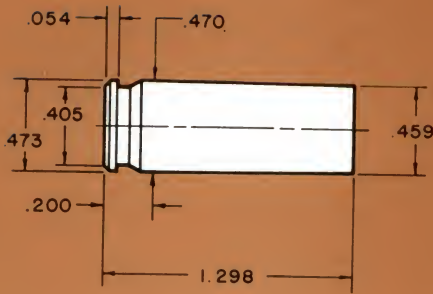
### 240 GRAIN SEMI WADCUTTER #4430



CARTRIDGE OVERALL LENGTH 1.630"

POWDER	VELOCITY				
	800 fps	850 fps	900 fps	950 fps	1000 fps
BULLSEYE	5.2 gr.	5.7 gr.	6.2 gr.	6.7 gr.	7.2 gr.
HI-SKOR 700-X	5.5 gr.	5.9 gr.	6.3 gr.	6.7 gr.	7.1 gr.
WIN 231	6.5 gr.	7.0 gr.	7.4 gr.	7.8 gr.	8.2 gr.
UNIQUE	6.7 gr.	7.1 gr.	7.6 gr.	8.0 gr.	8.5 gr.
SR 4756	7.6 gr.	8.0 gr.	8.4 gr.	8.8 gr.	9.2 gr.
WIN 630	10.9 gr.	11.6 gr.	12.3 gr.	13.0 gr.	13.7 gr.
2400	11.7 gr.	12.3 gr.	13.0 gr.	13.7 gr.	14.4 gr.

*Indicates maximum load • use with caution*



## 44 AUTO MAG

**PISTOL: AUTO MAG**

**BARREL: 6½", 1 in 18" TWIST**

**CASE: 308 FRONTIER REFORMED**

**PRIMER: CCI 350 LP MAG**

The origin of the Auto Mag dates back to the year 1971 when it was developed by Harry Sanford of Pasadena, California. This impressive firearm is constructed solely of stainless steel with the exception of the polyurethane grips. The cartridge is based on a 308, 30-06, or 243 case cut to a length of 1.298". The necks of the cases must be reamed to a depth of .490" to accept a 44 caliber bullet. Bullets should not be crimped in the case because the cartridge headspaces on the mouth of the case.

Our test firearm was not exceedingly reliable. The gun functioned only when it was clean and when the product of the bullet's weight and the velocity equaled 270,000, and preferably 300,000 or greater. With basic mathematics it is apparent that the Auto Mag (ours anyway), only functioned properly at maximum or near maximum loads. Also, after fifty rounds or so, the powder fouling in the action decreased reliable functioning of the gun.

The Auto Mag shoots accurately and when properly maintained can be enjoyable to shoot. With the Hornady 240 grain Jacketed Hollow Point velocities of 1450 fps were obtained.

**44 CALIBER (.430" Dia.)**  
**200 GRAIN HOLLOW POINT #4410**

CARTRIDGE OVERALL LENGTH 1.600"

POWDER	VELOCITY					
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps
WIN 630	20.0 gr.	20.8 gr.	21.6 gr.			
2400	21.2 gr.	22.2 gr.	23.1 gr.			
H110	24.0 gr.	24.6 gr.	25.2 gr.	25.8 gr.	26.4 gr.	27.0 gr.
WIN 296	24.4 gr.	25.0 gr.	25.7 gr.	26.4 gr.	27.0 gr.	
IMR 4227	25.2 gr.	25.8 gr.	26.5 gr.	27.1 gr.		

**44 CALIBER (.430" Dia.)**  
**240 GRAIN HOLLOW POINT #4420**

CARTRIDGE OVERALL LENGTH 1.600"

POWDER	VELOCITY					
	1200 fps	1250 fps	1300 fps	1350 fps	1400 fps	1450 fps
WIN 630	17.8 gr.	18.5 gr.	19.3 gr.			
2400	18.6 gr.	19.4 gr.	20.1 gr.	20.8 gr.		
H110	19.7 gr.	20.4 gr.	21.2 gr.	22.0 gr.	22.8 gr.	23.5 gr.
WIN 296	20.4 gr.	21.2 gr.	22.1 gr.	22.9 gr.	23.8 gr.	
IMR 4227	22.2 gr.	22.8 gr.	23.4 gr.	24.1 gr.		

These data may also be used with the 44 cal. 240 gr. FMJ Bullet.

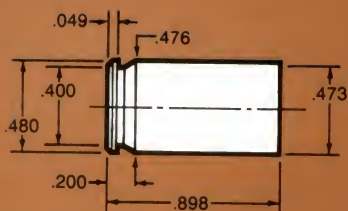
**44 CALIBER (.430" Dia.)**  
**265 GRAIN FLAT POINT #4300**

CARTRIDGE OVERALL LENGTH 1.695"

POWDER	VELOCITY					
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps
WIN 630	16.0 gr.	16.8 gr.	17.6 gr.	18.4 gr.		
2400	17.2 gr.	17.9 gr.	18.7 gr.	19.4 gr.		
H110	18.2 gr.	18.8 gr.	19.4 gr.	20.0 gr.	20.6 gr.	
WIN 296	18.6 gr.	19.3 gr.	20.1 gr.	20.8 gr.	21.6 gr.	22.4 gr.
IMR 4227	19.9 gr.	20.7 gr.	21.4 gr.	22.2 gr.	22.9 gr.	

 Indicates maximum load • use with caution





## 45 ACP

**PISTOL: COLT GOVERNMENT MODEL**

**BARREL: 5", 1 in 16" TWIST**

**CASE: R-P**

**PRIMER: FEDERAL 150**

The 45 Automatic was adopted by the United States Ordnance Department in 1911, six years after its introduction by John M. Browning.

Because the 45 Auto is the most powerful military handgun cartridge in use, it is also the most difficult to master. Control with the 45 Auto can be enhanced by shooting large numbers of plinking or target rounds at reduced velocities; the Hornady 185 grain Hollow Point and 5.3 grains of Bullseye make a good combination.

Hornady has five 45 caliber bullets for the 45 Auto reloader: the 185 grain Hollow Point, the 185 grain Target, the 200 grain Semi-wadcutter, the 230 grain Round Nose Full Metal Jacket, and the 230 grain Flat Point Full Metal Jacket.

In our 1911 Colt, Bullseye and Unique performed best with the lighter bullets. For target work, we recommend loadings in the 700-800 fps range for best accuracy. For the heavier 230 grain bullets, HS-6 and Unique display the best accuracy/velocity combinations. The 230 grain Flat Point proved to be the most accurate. Little or no crimp should be used, as the 45 Auto headspaces on the mouth of the case.

The 45 Auto is a versatile cartridge that can be used for self-defense, target shooting, plinking, and even hunting small game at close range.

# 45 CALIBER (.451" Dia.) 185 GRAIN HOLLOW POINT #4510



CARTRIDGE OVERALL LENGTH 1.230"

VELOCITY				
POWDER	700 fps	750 fps	800 fps	850 fps
NORMA R-1	4.1 gr.	4.4 gr.	4.8 gr.	5.1 gr.
HI-SKOR 700-X	4.4 gr.	4.6 gr.	4.9 gr.	5.1 gr.
RED DOT	4.4 gr.	4.7 gr.	5.0 gr.	5.4 gr.
BULLSEYE	4.2 gr.	4.6 gr.	5.0 gr.	5.3 gr.
WIN 231	5.5 gr.	5.9 gr.	6.2 gr.	6.6 gr.
UNIQUE	5.7 gr.	6.1 gr.	6.5 gr.	6.9 gr.
SR 4756	6.4 gr.	6.7 gr.	7.0 gr.	7.3 gr.
HERCO			7.0 gr.	7.5 gr.
HS-6			8.5 gr.	8.9 gr.

VELOCITY					
POWDER	900 fps	950 fps	1000 fps	1050 fps	1100 fps
NORMA R-1	5.4 gr.				
HI-SKOR 700-X	5.4 gr.	5.6 gr.			
RED DOT	5.7 gr.	6.0 gr.	6.3 gr.		
BULLSEYE	5.7 gr.	6.1 gr.	6.5 gr.		
WIN 231	7.0 gr.	7.4 gr.	7.7 gr.		
UNIQUE	7.3 gr.	7.7 gr.	8.1 gr.	8.5 gr.	
SR 4756	7.6 gr.	8.0 gr.	8.3 gr.	8.6 gr.	8.9 gr.
HERCO	8.1 gr.	8.6 gr.	9.2 gr.	9.7 gr.	
HS-6	9.4 gr.	9.8 gr.	10.3 gr.	10.7 gr.	

These data may also be used with the 45 caliber 185 gr. Target Bullet, though overall length may vary.



*Indicates maximum load • use with caution*

# 45 CALIBER (.452" Dia.)

## 200 GRAIN SEMI WADCUTTER #4526



CARTRIDGE OVERALL LENGTH 1.230"

POWDER	VELOCITY					
	650 fps	700 fps	750 fps	800 fps	850 fps	900 fps
HI-SKOR 700-X	3.7 gr.	4.0 gr.	4.2 gr.	4.5 gr.	4.8 gr.	
BULLSEYE	3.7 gr.	4.1 gr.	4.4 gr.	4.8 gr.	5.1 gr.	5.5 gr.
RED DOT	4.1 gr.	4.4 gr.	4.6 gr.	4.9 gr.	5.2 gr.	5.4 gr.
WIN 231	4.8 gr.	5.1 gr.	5.4 gr.	5.8 gr.	6.1 gr.	
UNIQUE		5.4 gr.	5.7 gr.	6.1 gr.	6.5 gr.	6.9 gr.
HERCO	6.1 gr.	6.4 gr.	6.8 gr.	7.1 gr.	7.5 gr.	

# 45 CALIBER (.451" Dia.)

## 200 GRAIN C/T MATCH #4515



CARTRIDGE OVERALL LENGTH 1.245"

POWDER	VELOCITY						
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
HI-SKOR 700-X	3.7 gr.	4.0 gr.	4.3 gr.	4.5 gr.	4.8 gr.	5.1 gr.	
RED DOT	3.9 gr.	4.2 gr.	4.5 gr.	4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.
BULLSEYE	4.0 gr.	4.3 gr.	4.7 gr.	5.1 gr.	5.4 gr.	5.8 gr.	
WIN 231	4.8 gr.	5.2 gr.	5.6 gr.	5.9 gr.	6.3 gr.	6.7 gr.	
UNIQUE	5.3 gr.	5.6 gr.	6.0 gr.	6.3 gr.	6.6 gr.	7.0 gr.	
HS-6	6.5 gr.	7.1 gr.	7.6 gr.	8.1 gr.	8.7 gr.	9.2 gr.	9.7 gr.

# 45 CALIBER (.451" Dia.)

## 230 GRAIN FULL METAL JACKET #4518

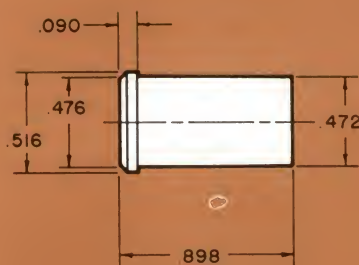


CARTRIDGE OVERALL LENGTH 1.200"

POWDER	VELOCITY							
	600 fps	650 fps	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
HI-SKOR 700-X	3.6 gr.	3.9 gr.	4.2 gr.	4.5 gr.	4.8 gr.	5.1 gr.		
RED DOT	3.6 gr.	3.9 gr.	4.3 gr.	4.7 gr.	5.1 gr.	5.4 gr.		
BULLSEYE	3.6 gr.	4.0 gr.	4.4 gr.	4.7 gr.	5.1 gr.	5.5 gr.		
WIN 231	4.6 gr.	4.9 gr.	5.3 gr.	5.7 gr.	6.0 gr.			
UNIQUE	4.8 gr.	5.2 gr.	5.6 gr.	6.0 gr.	6.4 gr.	6.9 gr.	7.3 gr.	
HERCO	5.2 gr.	5.7 gr.	6.2 gr.	6.7 gr.	7.2 gr.	7.7 gr.	8.2 gr.	
HS-6	6.6 gr.	7.1 gr.	7.5 gr.	7.9 gr.	8.4 gr.	8.8 gr.	9.2 gr.	9.7 gr.

These loads may also be used with the 45 caliber 230 gr. RN FMJ, though overall length may vary.

Indicates maximum load • use with caution



## 45 AUTO RIM

**PISTOL:** 45 COLT GOVERNMENT MODEL 1917

**BARREL:** 5½", 1 in 16" TWIST

**CASE:** REMINGTON

**PRIMER:** FEDERAL 150

Small half-moon clips, each holding three 45 ACP cartridges, made it possible for Smith & Wesson and Colt to chamber revolvers for the 45 Auto round. Revolvers from both companies were made in quantity during World War I, and thousands of such 45 Auto pistols were sold to civilians after that conflict.

In 1920 the Peters Cartridge Company produced a rimmed version of the service cartridge—the 45 Auto Rim—to eliminate the need for the pesky half-moon clips. Remington still loads this round in factory ammunition, and the 230 gr. lead bullet it uses will develop a muzzle velocity of 810 fps (5½" barrel).

The 45 caliber 185 gr. jacketed Hollow Point (.451" diameter) in the Hornady bullet line is an outstanding choice for the 45 Auto Rim as it is for the 45 ACP. Jacketed Hornady pistol bullets prevent leading at top obtainable velocities. Moreover, the lead used in them is quite soft compared to the lead which must be used in lubricated cast or swaged lead bullets, and expansion is excellent.



45 CALIBER (.451" Dia.)

185 GRAIN HOLLOW POINT #4510

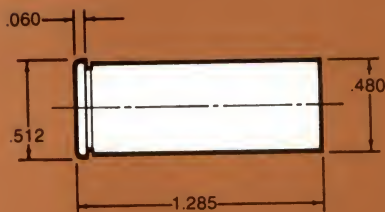


CARTRIDGE OVERALL LENGTH 1.220"

POWDER	VELOCITY					
	700 fps	750 fps	800 fps	850 fps	900 fps	950 fps
BULLSEYE	4.6 gr.	4.9 gr.	5.3 gr.	5.7 gr.	6.1 gr.	6.4 gr.
HI-SKOR 700X	4.8 gr.	5.1 gr.	5.4 gr.	5.7 gr.	5.9 gr.	6.2 gr.
RED DOT	4.9 gr.	5.2 gr.	5.5 gr.	5.8 gr.	6.2 gr.	6.5 gr.
UNIQUE	6.3 gr.	6.7 gr.	7.1 gr.	7.4 gr.	7.8 gr.	8.2 gr.

These data may also be used with the 45 cal. 185 gr. Target Bullet, though overall length may vary.

45 AUTO RIM



## 45 LONG COLT

**PISTOL: COLT BUNTLINE SPECIAL**

**BARREL: 4¾", 1 in 16" TWIST**

**CASE: WINCHESTER**

**PRIMER: FEDERAL 150**

This century old cartridge was originally chambered in Colt's famous Peacemaker, enjoyed an illustrious career in the Old West, declined in favor as double action revolvers came to dominate the handgun scene, and has managed to recapture shooter interest as single actions have staged a comeback.

The 45 Colt (or sometimes the 45 Long Colt) cartridge has been loaded since 1873 with various amounts of black and smokeless powders and bullets of different weights and designs.

Shooting jacketed Hornady pistol bullets in the 45 Colt, we were able to reach (and safely!) 1000 fps with our 250 gr. Hollow Point and Winchester's excellent 296 pistol powder. At such a velocity the big Long Colt slug carries 555 ft.-lbs. of muzzle energy, substantial performance from a cartridge so ancient. We definitely do not recommend a steady diet of such steamy loads in most single actions, for they do tend to loosen things up inside. And of course we never recommend that *any* shooter with *any* firearm start with the maximum listed load; top loads must be worked up carefully to insure that they'll be safe with the components and firearm the shooter is using.

One final note on our testing: our Colt Buntline Special's barrel is indeed only 4¾" long, the other 7¼" of the original barrel having been amputated before it came to us.

## 45 CALIBER (.452" Dia.)

200 GRAIN SEMI WADCUTTER  
#4526

CARTRIDGE OVERALL LENGTH 1.540"

VELOCITY					
POWDER	600 fps	650 fps	700 fps	750 fps	800 fps
HI-SKOR 700 X	5.0 gr.	5.3 gr.	5.6 gr.	5.9 gr.	6.2 gr.
BULLSEYE	4.6 gr.	5.1 gr.	5.5 gr.	5.9 gr.	6.3 gr.
RED DOT	4.7 gr.	5.2 gr.	5.6 gr.	6.1 gr.	6.6 gr.
WIN 231	6.3 gr.	6.7 gr.	7.1 gr.	7.5 gr.	7.9 gr.
UNIQUE					
WIN 630			11.9 gr.	12.7 gr.	13.5 gr.
2400	12.1 gr.	12.8 gr.	13.4 gr.	14.0 gr.	14.7 gr.

VELOCITY						
POWDER	850 fps	900 fps	950 fps	1000 fps	1050 fps	1100 fps
HI-SKOR 700 X	6.5 gr.	6.8 gr.	7.1 gr.			
BULLSEYE	6.7 gr.	7.1 gr.	7.5 gr.			
RED DOT	7.1 gr.	7.5 gr.	8.0 gr.	8.4 gr.		
WIN 231	8.2 gr.	8.6 gr.	9.0 gr.	9.4 gr.		
UNIQUE	8.8 gr.	9.3 gr.	9.9 gr.	10.4 gr.		
WIN 630	14.4 gr.	15.2 gr.	16.1 gr.	16.9 gr.	17.8 gr.	18.6 gr.
2400	15.3 gr.	15.9 gr.	16.6 gr.	17.2 gr.		

## 45 CALIBER (.452" Dia.)

## 250 GRAIN HOLLOW POINT #4520



CARTRIDGE OVERALL LENGTH 1.595"

VELOCITY						
POWDER	750 fps	800 fps	850 fps	900 fps	950 fps	1000 fps
BULLSEYE	6.0 gr.	6.4 gr.	6.8 gr.	7.2 gr.		
HI-SKOR 700-X	5.9 gr.	6.3 gr.	6.8 gr.			
UNIQUE	7.1 gr.	7.7 gr.	8.2 gr.	8.8 gr.		
WIN 630	11.8 gr.	12.7 gr.	13.6 gr.	14.5 gr.		
2400	13.8 gr.	14.5 gr.	15.1 gr.	15.8 gr.	16.4 gr.	
WIN 296	19.5 gr.	19.9 gr.	20.4 gr.	20.8 gr.	21.2 gr.	21.6 gr.

Indicates maximum load • use with caution

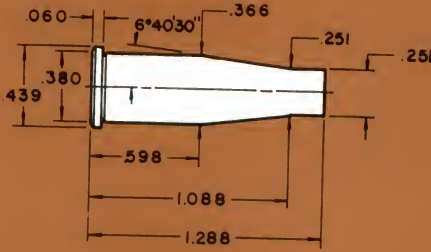
## INTRODUCTION TO THOMPSON CENTER DATA

Thompson/Center Arms Division was formed in 1965 when the Contender pistol was first introduced. The Contender is now offered in over twenty-five calibers, ranging from the 22 Rimfire to the mighty 45 Winchester Magnum. This pistol is a versatile and rugged handgun that ranges in use from varminting to big game to Metallic Silhouette Shooting. The Thompson/Center has accounted for many wins in Metallic Silhouette matches and with its 10 and 14 inch barrels, provides excellent velocities with good accuracy.

The following section of the *Hornady Handbook* is designed to give reloading data for the more popular wildcat and commercial cartridges developed by Thompson Center and included are discussions of many reloading problems that might occur, with tips and techniques to prevent or cure such problems.







## 22 REMINGTON JET

**PISTOL:** THOMPSON CENTER

**BARREL:** 10", 1 in 14" TWIST

**CASE:** R-P

**PRIMER:** R-P 5½

The 22 Jet cartridge was originally introduced jointly by Remington and Smith and Wesson in 1961. The cartridge was initially chambered in the Smith and Wesson Model 53 revolver. Popularity of the cartridge rapidly dropped because of cylinder lock up problems. When fired, the fast tapering case would back out of the chamber slightly and lock up the cylinder.

However, with the single shot T/C no such problem exists, and the round can be exploited to its full potential. We did encounter one problem with our barrel. Once fired factory ammunition gave head separations, but by pulling the bullets, dropping the charge, and then seating the bullets to engage the rifling, we were able to fireform the cases and alleviate the headspace problem.

If this data is used for a Smith and Wesson Model 53, charges should be dropped by 10%. T/C barrels have a .224" bore diameter while Smith and Wessons have .222" or .223" diameter bores. The smaller bore diameter of the Smith and Wesson gives slightly higher pressures than the .224" diameter barrel of the T/C.

Best results were obtained using IMR 4227 or H110 with the Hornady 45 grain Hornet bullet.

## 22 CALIBER (.222" Dia.)

### 40 GRAIN JET #2210

CARTRIDGE OVERALL LENGTH 1.550"



POWDER	VELOCITY					
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps
H110	9.3 gr.	10.0 gr.	10.7 gr.	11.3 gr.	12.0 gr.	12.7 gr.
2400	9.9 gr.	10.5 gr.	11.0 gr.	11.5 gr.		
WIN 296	9.9 gr.	10.7 gr.	11.5 gr.	12.2 gr.	13.0 gr.	
IMR 4227	10.7 gr.	11.4 gr.	12.2 gr.	12.9 gr.	13.7 gr.	

## 22 CALIBER (.223" Dia.)

### 45 GRAIN HORNET #2220

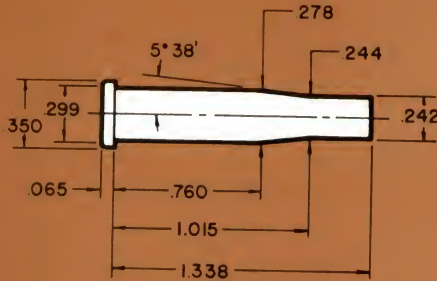
CARTRIDGE OVERALL LENGTH 1.659"



POWDER	VELOCITY					
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
H110	8.9 gr.	9.6 gr.	10.3 gr.	11.0 gr.	11.7 gr.	12.4 gr.
2400	9.5 gr.	10.0 gr.	10.5 gr.	11.0 gr.		
WIN 296	9.3 gr.	10.1 gr.	10.8 gr.	11.5 gr.	12.3 gr.	
IMR 4227	10.1 gr.	10.9 gr.	11.7 gr.	12.4 gr.	13.2 gr.	
WIN 680	10.7 gr.	11.4 gr.	12.2 gr.	12.9 gr.		



*Indicates maximum load • use with caution*



## 22 HORNET

**PISTOL: THOMPSON CENTER**

**BARREL: 10", 1 in 14" TWIST**

**CASE: REMINGTON**

**PRIMER: WINCHESTER 6.5**

The 22 Hornet has always been a fine short range varmint round. Only 300 f.p.s. velocity is lost when the 10" T/C data is compared to that obtained from a rifle. In a handgun, 2400 f.p.s. is really potent and consequently, the Hornet also makes an excellent small game cartridge.

Our 22 Hornet was the most accurate of the Thompson/Center barrels tested in the Hornady lab. Excellent groups were produced with Winchester 680 and Hercules 2400. Scopes mounted on the T/C make it possible to show the true accuracy potential of these fine barrels. Scopes and bases for mounting are presently available from such firms as Leupold, Redfield, Burris, Bushnell, and of course, Thompson/Center.

### 22 CALIBER (.224" Dia.)

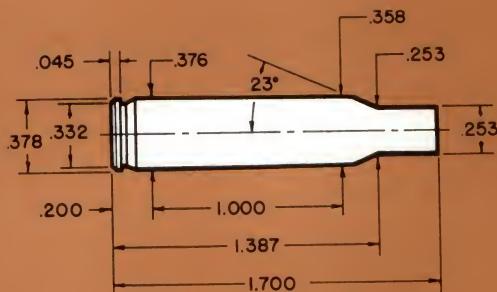
### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 1.786"



POWDER	VELOCITY					
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
H110			8.7 gr.	9.1 gr.	9.4 gr.	9.8 gr.
2400	8.0 gr.	8.5 gr.	8.9 gr.	9.4 gr.	9.8 gr.	
WIN 680	8.6 gr.	9.2 gr.	9.9 gr.	10.6 gr.	11.2 gr.	11.9 gr.
IMR 4227	8.7 gr.	9.4 gr.	10.0 gr.	10.7 gr.	11.3 gr.	

*Indicates maximum load • use with caution*



## 222 REMINGTON

**PISTOL: THOMPSON CENTER**

**BARREL: 10", 1 in 14" TWIST**

**CASE: REMINGTON**

**PRIMER: REMINGTON 7½**

The 222 is an excellent round in a rifle, but loses ground when used in a 10" barreled pistol. Powder capacity of the 222 is too large for efficient performance in only 10 inches of barrel. Only the faster powders perform well enough to produce uniformity capable of good accuracy.

BL-C2 and IMR 4198 performed best of all powders listed throughout the range of bullets tested. Hornady's 50 grain SX bullet proved to be perfect for 222 velocities when tested on prairie dogs. At 222 pistol velocities, only SX bullets and the 45 grain Hornet bullet should be used on varmints, and for small edible game, the 55 FMJ is a good performer.



## 22 CALIBER (.224" Dia.)

### 45 GRAIN HORNET #2230

CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY					
	2200 fps	2300 fps	2400 fps	2500 fps	2600 fps	2700 fps
IMR 4198	18.5 gr.	19.1 gr.	19.6 gr.	20.2 gr.	20.7 gr.	21.3 gr.
IMR 3031	21.8 gr.	22.4 gr.	22.9 gr.			
BL-C2	22.7 gr.	23.4 gr.	24.2 gr.	24.9 gr.		
WIN 748	24.0 gr.	24.7 gr.	25.3 gr.	26.0 gr.		

222 REMINGTON

## 22 CALIBER (.224" Dia.)

### 50 GRAIN SX (Super Explosive) #2240

CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY				
	2100 fps	2200 fps	2300 fps	2400 fps	2500 fps
IMR 4198	17.5 gr.	18.2 gr.	18.9 gr.	19.6 gr.	20.2 gr.
IMR 3031	21.0 gr.	21.8 gr.	22.5 gr.		
BL-C2	21.3 gr.	22.1 gr.	23.0 gr.	23.8 gr.	24.6 gr.
WIN 748	22.7 gr.	23.5 gr.	24.4 gr.	25.2 gr.	26.1 gr.

These data may also be used with the 22 cal. 50 gr. SP bullet.

## 22 CALIBER (.224" Dia.)

### 55 GRAIN SX (Super Explosive) #2260

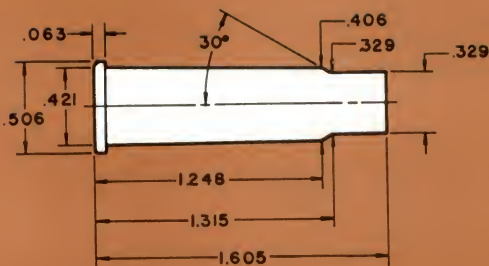
CARTRIDGE OVERALL LENGTH 2.130"



POWDER	VELOCITY				
	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
IMR 4198	16.7 gr.	17.4 gr.	18.1 gr.	18.8 gr.	19.4 gr.
IMR 3031	20.1 gr.	20.9 gr.	21.6 gr.	22.4 gr.	
BL-C2	20.7 gr.	21.5 gr.	22.3 gr.	23.1 gr.	23.9 gr.
WIN 748	21.9 gr.	22.7 gr.	23.4 gr.	24.2 gr.	24.9 gr.

These data may also be used with the 22 cal. 55 gr. SP, 52 gr. BTHP, 53 gr. HP., and 55 gr. FMJ bullets.

Indicates maximum load • use with caution



## 30 HERRETT

**PISTOL: THOMPSON CENTER**

**BARREL: 10", 1 in 14" TWIST**

**CASE: FRONTIER REFORMED**

**PRIMER: FEDERAL 210**

The 30 Herrett originated as the product of Steve Herrett and Bob Milek in 1972 and is one of the most potent of the calibers offered by Thompson/Center. The original intent of the 30 Herrett was to create a cartridge that provided ample power for big game with a case small enough to provide good loading density, and large enough to obtain good velocities from a 10" barrel; the result was a very efficient cartridge.

Cases for the 30 Herrett are formed from 30-30 cases. Sizing is a critical step in proper forming of 30 Herrett cases. If the case is not sized enough and closing is difficult, accuracy will suffer and pressure signs will appear prematurely. If the case is sized too much, excessive head space creates misfires and unnecessary case stretch, which diminishes case life. To eliminate the aforementioned problems, the size die should first be adjusted so the action will not close on the sized case. The reloader must then turn the die in approximately a sixteenth of a revolution at a time, checking the sized case in the action after each adjustment. When the action clicks shut easily, the die is properly adjusted.

Hornady's 110 and 130 grain Spire Point bullets gave excellent accuracy in our barrel. Best results were obtained using Winchester 296 and H-4227 with the 110 Spire Point. Best accuracy and uniformity using the 130 grain Spire Point was obtained with Winchester 680 powder. For the Metallic Silhouette Shooter, the Hornady 150 grain Spire Point and 23 grains of Winchester 680 makes an excellent Ram load. With Hornady's dependable Spire Point bullets, the 30 Herrett is also a top choice for the Handgun Hunter.

## 30 CALIBER (.308" Dia.)

## 110 GRAIN SPIRE POINT #3010

CARTRIDGE OVERALL LENGTH 2.320"



VELOCITY					
POWDER	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
2400	18.0 gr.	19.3 gr.	20.6 gr.	21.9 gr.	
WIN 296	18.7 gr.	20.1 gr.	21.5 gr.	22.9 gr.	24.3 gr.
H4227	20.2 gr.	21.6 gr.	23.0 gr.	24.5 gr.	25.9 gr.
SR 4759	20.4 gr.	22.1 gr.			
IMR 4227	21.6 gr.	22.5 gr.	23.4 gr.	24.2 gr.	25.1 gr.
WIN 680	21.4 gr.	22.7 gr.	23.9 gr.	25.1 gr.	26.4 gr.
IMR 4198	23.7 gr.	25.3 gr.	26.8 gr.	28.4 gr.	

These data may also be used with the 30 cal. 110 gr. FMJ and 110 gr. RN Bullets.

## 30 CALIBER (.308" Dia.)

## 130 GRAIN SPIRE POINT #3020

CARTRIDGE OVERALL LENGTH 2.320"



VELOCITY					
POWDER	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
WIN 296	17.6 gr.	18.9 gr.	20.1 gr.	21.4 gr.	
IMR 4227	18.7 gr.	19.9 gr.	21.2 gr.	22.5 gr.	
H4227	19.5 gr.	20.6 gr.	21.8 gr.	22.9 gr.	24.0 gr.
WIN 680	18.7 gr.	20.3 gr.	21.9 gr.	23.6 gr.	25.2 gr.
SR 4759	18.5 gr.	20.5 gr.	22.4 gr.		
IMR 4198		22.8 gr.	24.3 gr.	25.9 gr.	27.4 gr.

## 30 CALIBER (.308" Dia.)

## 150 GRAIN SPIRE POINT #3031

CARTRIDGE OVERALL LENGTH 2.310"

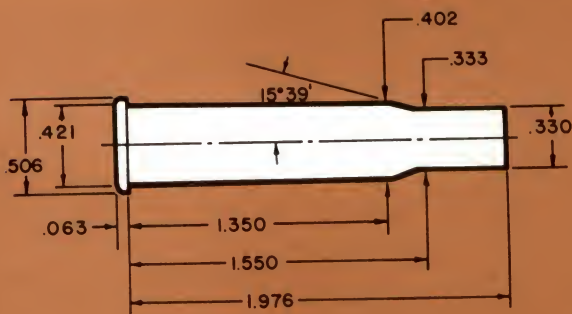


VELOCITY					
POWDER	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
WIN 296	15.8 gr.	17.2 gr.	18.6 gr.	20.0 gr.	
H4227		18.0 gr.	19.6 gr.	21.1 gr.	
WIN 680	17.2 gr.	18.7 gr.	20.1 gr.	21.6 gr.	23.0 gr.
IMR 4227	18.3 gr.	19.4 gr.	20.4 gr.	21.5 gr.	
IMR 4198	20.0 gr.	21.4 gr.	22.8 gr.	24.2 gr.	25.7 gr.

These data may also be used with the 30 cal. 150 gr. RN and 150 gr. FMJ bullets.

Indicates maximum load • use with caution





## 30-30

**PISTOL: THOMPSON CENTER CONTENDER****BARREL: 10", 1 in 14" TWIST****CASE: FRONTIER****PRIMER: FEDERAL 210**

Uniformity from shot to shot is necessary for accuracy with any firearm. This uniformity was never really obtained throughout our experimentation. To explain this problem, we need only to look at case capacity versus barrel length. The 30/30 case was designed to perform efficiently in a rifle, which is the major problem.

With the slow burning powders that give excellent results in a rifle, the opposite is true in the 10" handgun. Too much powder is left unburned, which only contributes to poor accuracy. When powders that are fast enough to give suitable velocities are used, poor loading density is the result, along with inadequate accuracy. Also, to insure proper ignition and alleviate misfires, cases should be neck sized which allows headspacing on the shoulder of the case.

The powders listed, performed the best of those tested during our experimentation. Winchester 680 performed the best with the 110 grain Spire Point and the 130 grain Spire Point, while IMR 3031 gave acceptable results with the 150 grain Spire Point. Results with the 30/30 were never on par with the 30 Herrett, a more efficient cartridge.



**30 CALIBER (.308" Dia.)**  
**110 GRAIN SPIRE POINT #3010**

CARTRIDGE OVERALL LENGTH 2.710"



VELOCITY					
POWDER	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
2400	17.6 gr.	19.0 gr.	20.3 gr.	21.7 gr.	
IMR 4227	20.1 gr.	21.3 gr.	22.4 gr.	23.5 gr.	24.6 gr.
WIN 680	19.1 gr.	20.7 gr.	22.3 gr.	23.9 gr.	25.5 gr.
IMR 4198	23.8 gr.	24.9 gr.	25.9 gr.	27.0 gr.	28.0 gr.

These data may also be used with the 30 cal. 110 gr. FMJ and 110 gr. RN Bullets.

**30 CALIBER (.308" Dia.)**  
**130 GRAIN SPIRE POINT #3020**

CARTRIDGE OVERALL LENGTH 2.700"



VELOCITY					
POWDER	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	17.7 gr.	19.0 gr.	20.4 gr.	21.8 gr.	
WIN 680	19.2 gr.	20.7 gr.	22.3 gr.	23.8 gr.	
IMR 4198	22.8 gr.	23.9 gr.	25.1 gr.	26.2 gr.	27.3 gr.

**30 CALIBER (.308" Dia.)**  
**150 GRAIN SPIRE POINT #3031**

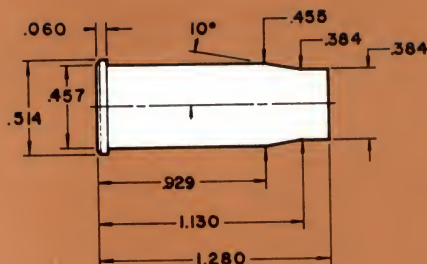
CARTRIDGE OVERALL LENGTH 2.770"



VELOCITY					
POWDER	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
2400	17.1 gr.	18.5 gr.	19.9 gr.	21.3 gr.	22.7 gr.
WIN 680	18.7 gr.	20.3 gr.	22.0 gr.	23.6 gr.	
IMR 4198	22.6 gr.	23.9 gr.	25.2 gr.	26.5 gr.	27.8 gr.
IMR 3031	27.9 gr.	29.6 gr.	31.3 gr.	32.9 gr.	

These data may also be used with the 30 cal. 150 gr. RN and 150 gr. FMJ bullets.

*Indicates maximum load • use with caution*



## 357/44 BAIN & DAVIS

**PISTOL: THOMPSON CENTER**

**BARREL: 10", 1 in 14" TWIST**

**CASE: FEDERAL REFORMED**

**PRIMER: CCI 350**

The 357/44 B&D is a 44 Magnum case necked down to 38 caliber. Its origin dates back to about 1964. Cases are easily formed because no trimming is necessary, and a full length resizing die along with a seating die are the only necessary dies.

The 357/44 B&D is a fine game getter from varmints through deer, and is a good cartridge for the rapidly growing sport of Handgun Silhouette Shooting.

Our test barrel gave excellent results with all powder-bullet combinations at maximum or near maximum velocities in the Thompson/Center Contender. Maximum loads should be approached with caution, as all barrels will not produce the same results.

### 38 CALIBER (.357" Dia.)

#### 110 GRAIN HOLLOW POINT #3570

CARTRIDGE OVERALL LENGTH 1.580"



VELOCITY						
POWDER	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps	2400 fps
2400	19.7 gr.	20.9 gr.	22.1 gr.	23.3 gr.	24.5 gr.	
WIN 296			23.8 gr.	25.4 gr.	27.0 gr.	28.7 gr.
IMR 4227	23.0 gr.	24.4 gr.	25.7 gr.	27.1 gr.	28.5 gr.	

357/44 BAIN & DAVIS

### 38 CALIBER (.357" Dia.)

#### 125 GRAIN HOLLOW POINT #3571

CARTRIDGE OVERALL LENGTH 1.580"



VELOCITY						
POWDER	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
2400	17.1 gr.	18.5 gr.	19.9 gr.	21.2 gr.	22.6 gr.	
WIN 296				22.4 gr.	24.0 gr.	25.7 gr.
IMR 4227	20.9 gr.	22.2 gr.	23.6 gr.	24.9 gr.	26.3 gr.	27.6 gr.

These data may also be used with the 30 cal. 125 gr. FP bullet.

### 38 CALIBER (.357" Dia.)

#### 158 GRAIN HOLLOW POINT #3575

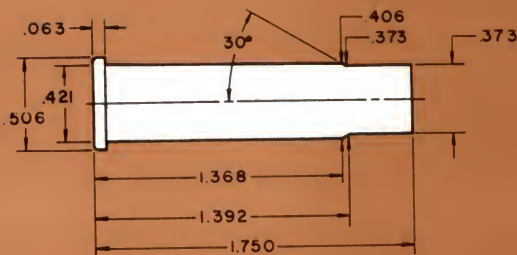
CARTRIDGE OVERALL LENGTH 1.580"



VELOCITY						
POWDER	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps	2100 fps
2400	16.9 gr.	18.2 gr.	19.5 gr.	20.8 gr.		
WIN 296	18.0 gr.	19.4 gr.	20.8 gr.	22.2 gr.	23.5 gr.	24.9 gr.
IMR 4227	20.7 gr.	21.9 gr.	23.1 gr.			

These data may also be used with the 38 cal. 160 gr. FMJ, and 158 gr. FP bullets.

*Indicates maximum load • use with caution*



# 357 HERRETT

PRIMER: FEDERAL 210

The 357 Herrett makes a superb hunting handgun cartridge and is equally effective for the popular sport of Metallic Silhouette Shooting. The powders that produced the best results were IMR 4227 and 2400.



**38 CALIBER (.357" Dia.)****110 GRAIN HOLLOW POINT #3570**

CARTRIDGE OVERALL LENGTH 2.065"

POWDER	VELOCITY				
	1900 fps	2000 fps	2100 fps	2200 fps	2300 fps
2400	22.0 gr.	23.0 gr.	24.0 gr.	25.0 gr.	26.0 gr.
WIN 630	21.3 gr.	22.6 gr.	23.8 gr.	25.1 gr.	26.3 gr.
IMR 4227	25.3 gr.	26.1 gr.	26.9 gr.	27.7 gr.	28.5 gr.

**38 CALIBER (.357" Dia.)****125 GRAIN HOLLOW POINT #3571**

CARTRIDGE OVERALL LENGTH 2.065"

POWDER	VELOCITY				
	1800 fps	1900 fps	2000 fps	2100 fps	2200 fps
WIN 630	20.1 gr.	21.5 gr.	23.0 gr.	24.4 gr.	25.8 gr.
2400	21.2 gr.	22.3 gr.	23.3 gr.	24.4 gr.	25.5 gr.
WIN 296		22.0 gr.	23.5 gr.	25.0 gr.	26.4 gr.
IMR 4227			25.8 gr.	27.0 gr.	28.2 gr.

These data may also be used with the 38 cal. 125 gr. FP bullet.

**38 CALIBER (.357" Dia.)****158 GRAIN HOLLOW POINT #3575**

CARTRIDGE OVERALL LENGTH 2.065"

POWDER	VELOCITY				
	1600 fps	1700 fps	1800 fps	1900 fps	2000 fps
H110	19.1 gr.	20.2 gr.	21.2 gr.	22.2 gr.	
WIN 630	18.9 gr.	20.2 gr.	21.4 gr.	22.7 gr.	
2400	18.8 gr.	20.1 gr.	21.5 gr.	22.9 gr.	
WIN 296	20.8 gr.	21.9 gr.	23.0 gr.	24.1 gr.	25.2 gr.
IMR 4227	20.5 gr.	21.7 gr.	23.0 gr.	24.3 gr.	25.6 gr.

These data may also be used with the 38 cal. 160 gr. FMJ and 158 gr. FP bullets.

 Indicates maximum load • use with caution

**35 CALIBER (.358" Dia.)**  
**200 GRAIN SPIRE POINT #3510**



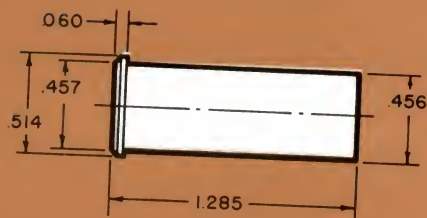
CARTRIDGE OVERALL LENGTH 2.400"

VELOCITY					
POWDER	1400 fps	1500 fps	1600 fps	1700 fps	1800 fps
IMR 4227	18.3 gr.	19.6 gr.	20.9 gr.	22.3 gr.	23.6 gr.
WIN 680		20.3 gr.	22.2 gr.	24.1 gr.	25.9 gr.
IMR 4198	23.7 gr.	25.1 gr.	26.4 gr.	27.8 gr.	

These data may also be used with the 35 cal. 200 gr. RN bullet, though overall length may vary.



*Indicates maximum load • use with caution*



## 44 MAGNUM

**PISTOL:** THOMPSON CENTER

**BARREL:** 14", 1 in 22" TWIST

**CASE:** FRONTIER

**PRIMER:** WINCHESTER 7M-111F

The 14" Thompson/Center chambered in 44 Remington Magnum, a cartridge that dates back to 1955, yielded results very near those obtained with the 44 Magnum Ruger Carbine Rifle. The 14" T/C and the 44 Magnum cartridge make an excellent combination for Metallic Silhouette Shooting and provides the big game hunter ample power for hunting deer, black bear, and even moose at close ranges.

With all powders tested throughout the range of bullets, accuracy was very good. However, best accuracy and uniformity were obtained using Winchester 296 and IMR 4227.

# 44 CALIBER (.430" Dia.) 200 GRAIN HOLLOW POINT #4410



CARTRIDGE OVERALL LENGTH 1.590"

POWDER	VELOCITY					
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps	1950 fps
BLUE DOT	19.5 gr.	20.2 gr.	20.8 gr.			
2400	22.8 gr.	23.5 gr.	24.3 gr.			
H110	24.1 gr.	24.8 gr.	25.6 gr.	26.4 gr.	27.2 gr.	28.0 gr.
WIN 296	25.3 gr.	26.0 gr.	26.7 gr.	27.4 gr.	28.1 gr.	28.8 gr.
IMR 4227	27.1 gr.	27.7 gr.	28.2 gr.			

# 44 CALIBER (.430" Dia.) 240 GRAIN HOLLOW POINT #4420



CARTRIDGE OVERALL LENGTH 1.610"

POWDER	VELOCITY					
	1500 fps	1550 fps	1600 fps	1650 fps	1700 fps	1750 fps
BLUE DOT	17.1 gr.	17.6 gr.	18.2 gr.	18.7 gr.		
2400	19.8 gr.	20.6 gr.	21.4 gr.	22.2 gr.		
H110			22.5 gr.	23.3 gr.	24.2 gr.	25.0 gr.
WIN 296	21.9 gr.	22.6 gr.	23.3 gr.	24.1 gr.	24.8 gr.	
IMR 4227	23.7 gr.	24.3 gr.	24.8 gr.	25.4 gr.		

These data may also be used with the 44 cal. 240 gr. FMJ bullet.

# 44 CALIBER (.430" Dia.) 265 GRAIN FLAT POINT #4300

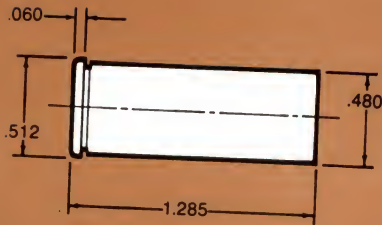


CARTRIDGE OVERALL LENGTH 1.650"

POWDER	VELOCITY					
	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
BLUE DOT	15.1 gr.	15.6 gr.	16.1 gr.	16.7 gr.	17.2 gr.	
2400	18.4 gr.	19.0 gr.	19.7 gr.	20.4 gr.		
H110				20.8 gr.	21.6 gr.	22.3 gr.
WIN 296	19.7 gr.	20.5 gr.	21.2 gr.	21.9 gr.	22.6 gr.	
IMR 4227	20.7 gr.	21.3 gr.	22.0 gr.	22.6 gr.	23.3 gr.	24.0 gr.

Indicates maximum load • use with caution





## 45 LONG COLT (Ruger & T/C Only)

PISTOL: THOMPSON CENTER  
BARREL: 10", 1 in 22" TWIST  
CASE: WINCHESTER  
PRIMER: WINCHESTER 7M-111F

The following data is to be used only in the T/C or the Ruger Blackhawk. The pressures of the loading data that follows are slightly higher than the earlier 45 Colt revolvers or their replicas can withstand.

The loads that follow are for the handgun hunter or metallic silhouette shooter. If loads are desired for the 200 grain LSWC, the data for the standard 45 Long Colt should be used. 2400 and IMR 4227 produced the best results with our firearm. Note: When loading for the Ruger Blackhawk, a heavy crimp is necessary to prevent bullets from sliding out of the case during recoil.

### 45 CALIBER (.452" Dia.) 250 GRAIN HOLLOW POINT #4520

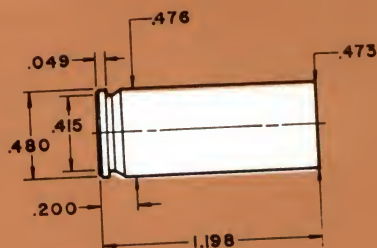


CARTRIDGE OVERALL LENGTH 1.605"

POWDER	VELOCITY						
	1050 fps	1100 fps	1150 fps	1200 fps	1250 fps	1300 fps	1350 fps
UNIQUE	9.1 gr.	9.7 gr.	10.2 gr.	10.7 gr.	11.3 gr.		
BLUE DOT	12.4 gr.	12.9 gr.	13.5 gr.	14.0 gr.	14.6 gr.	15.1 gr.	
WIN 630	14.3 gr.	15.1 gr.	15.8 gr.	16.6 gr.			
2400	15.2 gr.	16.0 gr.	16.8 gr.	17.6 gr.	18.4 gr.	19.1 gr.	19.9 gr.
IMR 4227	17.9 gr.	18.8 gr.	19.7 gr.	20.6 gr.	21.5 gr.	22.4 gr.	

Indicates maximum load • use with caution

45 LONG COLT (Ruger & T/C Only)



## 45 WINCHESTER MAGNUM

**PISTOL:** THOMPSON CENTER

**BARREL:** 14", 1 in 16" TWIST

**CASE:** WINCHESTER

**PRIMER:** WINCHESTER 7M-111F

The 45 Winchester Magnum cartridge, developed by Winchester, was to be introduced in the Wildey gas operated semi-automatic pistol in 1979, but at the time of this writing, the pistol is not yet available. Winchester has loaded ammunition available and Thompson Center Arms has manufactured two bull barrels for their Contender pistol in 10 and 14 inch lengths, chambered for the 45 Winchester Magnum.

This cartridge nearly duplicates in case capacity and ballistics the 44 Remington Magnum. However, the caliber is 45 and in appearance, it resembles a lengthened 45 ACP case.

Our test barrel gave excellent results with all bullet weights using Hercules Blue Dot and Hodgdon HS-7 powders. The 14" Thompson Center Contender, a near maximum charge of Blue Dot, and the Hornady 250 grain Jacketed Hollow Point should make an excellent combination for hunting or metallic silhouette shooting.

## 45 CALIBER (.451" Dia.)

## 185 GRAIN HOLLOW POINT #4510

CARTRIDGE OVERALL LENGTH 1.510"



POWDER	VELOCITY				
	1700 fps	1750 fps	1800 fps	1850 fps	1900 fps
UNIQUE	13.8 gr.	14.5 gr.	15.1 gr.		
BLUE DOT	17.9 gr.	18.8 gr.	19.6 gr.	20.5 gr.	21.3 gr.
HS-7	19.5 gr.	20.3 gr.	21.1 gr.	21.8 gr.	
WIN 630	22.1 gr.	22.8 gr.	23.6 gr.	24.3 gr.	25.1 gr.

## 45 CALIBER (.451" Dia.)

230 GRAIN FULL METAL JACKET  
(FLAT POINT) #4518

CARTRIDGE OVERALL LENGTH 1.500"



POWDER	VELOCITY						
	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps	1600 fps	1650 fps
UNIQUE	11.6 gr.	12.1 gr.	12.6 gr.	13.1 gr.			
BLUE DOT	15.0 gr.	15.5 gr.	16.0 gr.	16.5 gr.	17.0 gr.	17.5 gr.	18.0 gr.
HS-7	16.1 gr.	16.7 gr.	17.4 gr.	18.0 gr.			
2400	18.7 gr.	19.4 gr.	20.2 gr.	21.0 gr.	21.8 gr.		
IMR 4227	21.4 gr.	22.6 gr.	23.8 gr.	25.0 gr.			

These data may also be used with the 45 cal. 230 gr. RN-FMJ Bullet, though overall length may vary.

## 45 CALIBER (.452" Dia.)

250 GRAIN JACKETED  
HOLLOW POINT #4520

CARTRIDGE OVERALL LENGTH 1.480"



POWDER	VELOCITY					
	1300 fps	1350 fps	1400 fps	1450 fps	1500 fps	1550 fps
UNIQUE	11.0 gr.	11.4 gr.	11.9 gr.			
BLUE DOT	14.4 gr.	14.9 gr.	15.3 gr.	15.8 gr.	16.3 gr.	16.8 gr.
HS-7	15.6 gr.	16.2 gr.	16.7 gr.	17.3 gr.		
2400	17.8 gr.	18.5 gr.	19.3 gr.	20.1 gr.		
WIN 296	19.2 gr.	20.2 gr.	21.2 gr.	22.2 gr.	23.2 gr.	
IMR 4227	20.3 gr.	21.3 gr.	22.2 gr.	23.2 gr.	24.2 gr.	

Indicates maximum load • use with caution

## NOTES



*Problems, Tips,  
Techniques  
& Tools For  
The Reloader*

The ensuing sections will discuss the myriad of problems that face the reloader. Included are tips, techniques, and special tools to aid the reloader in preventing and solving any problems that might occur prior to, during, or after the reloading process. Some problems are a combination of factors and require careful scrutiny to determine their nature.

### **THE TROUBLE WITH CASES**

One of the first and most prevalent problems encountered by the reloader is the result of improper preparation of new or once fired factory cartridge cases. New or once fired factory cases have sharp, squared edges on the inside of the case mouth. If not chamfered, bullet seating resistance, along with jacket shaving can ruin cases and/or accuracy. A good practice is to run the necks of new cases over the expander ball of the sizing die. This procedure rounds the necks. The next and final step is to chamfer the inside of the case mouth, making the cases ready for trouble free reloading.

The most common physical defects that cases incur during numerous reloadings are dents, scratches, corrosion, and splits. Most body dents, if small in size, can be removed by firing, but cases with large dents should be discarded. If neck or mouth dents are not too severe, removal can be accomplished by rolling out the dent(s) with an appropriately sized wooden dowel or some facsimile.

Scratches can be the result of a dirty chamber or grit left in resizing dies from uncleaned cases. Cases with deep scratches should be discarded as they will eventually develop splits.

Corrosion is the result of chemical action. Corrosion can be caused by such things as leather belts, primers, powder, and cleaning compounds containing ammonia. Generally, such cases should be discarded. However, if the corrosion is light and recent, fine steel wool can be employed for removal.

Splits are generally the result of work hardened brass and most often occur in the neck region of the case. All cases with splits should be discarded as further use can cause damage to the chamber. The life of a case neck can be extended by the process of annealing. When a case is lost due to a split neck, the time for annealing has arrived. Annealing is a process whereby the brass is heated and cooled. This process removes brittleness and when properly done, restores brass to its original crystalline structure. A very simple and effective method of annealing involves the use of a pan of water and a small hand held propane torch. First, all cases must be decapped and then placed in a pan of water such that only the necks and a very small portion of the shoulder protrude from the water. The only portion of the case to be annealed is the neck region. Uniform heating and cooling is very important to the procedure. If the brass is not heated enough, it will not be restored to the correct crystalline structure. When heating the brass, the flame should be placed directly in the case mouth and the neck heated until it turns color or becomes a dull red. In addition, the time

elapsed in obtaining this discoloration should be noted, and that much time allowed for each case. The criticalness of timing is very important as changes will cause necks to have varying hardness, which in turn means different bullet gripping tension. Such variations definitely affect accuracy. After removing the flame, allow approximately three seconds and submerge the case in the water. Upon completion, before using the cases, the cases must be thoroughly dried, inside and out!

Case neck thickening can become a problem when cases have been fired several times in firearms that permit a great deal of case stretching. The process of stretching and resizing causes the brass to flow; the recipient of this brass flow is the neck. Neck thicknesses can be determined by the use of a caliper, measuring the diameter of a case neck with the bullet seated. Also if a bullet cannot slide freely in and out of a fired case, the case neck is too thick. If found to be too thick, as listed in the Hornady manual, the necks should be reamed with an appropriate tool. If cases with excessively thick necks are fired while in this condition, excessive pressure can result. When the brass around the bullet cannot expand to release the bullet, pressures climb drastically.

On rare occasions, the reloader may encounter a case with "soft" brass. Normally, such brass will show signs of extreme pressure when fired (enlarged primer pocket, ejector marks on the case head, etc.). When confronted with such a problem, the typical reloader assumes extreme pressure. However, if good reloading practices have been followed, and the remainder of the fired cases show no signs of pressure, the chances are good that the culprit was a soft piece of brass. All soft cases should be discarded.

Another non-frequent occurrence is shoulder collapse. This problem most often occurs with the combination of large capacity cases, too much freebore, and a light charge of very slow burning powder. This combination enables gases to leak past the neck and around the shoulder, ergo, a collapsed shoulder.

### **HEADSPACE PROBLEMS**

Cases that exhibit bright rings just ahead of the web or display primer set back are the result of headspace problems. Problems such as this can be related directly to faulty firearms or incorrect sizing of cases. During the process of firing, the primer is struck by the firing pin, moving the case forward slightly. If the entire case is allowed to move forward excessively, stopping only when the shoulder of the case contacts the shoulder of the chamber, excess headspace is present. At this point ignition has occurred, and the case has expanded to fill the chamber. With the sides of the case in contact with the chamber wall and the head of the case unsupported, the pressure pushes back on the head of the case until the head contacts the bolt. The point of "give" is above the web. This area stretches, and with repeated firings head separation occurs (the number of firings is directly related to the severity of headspace).



Headspace problems in firearms are the result of improper chambering, soft receivers or from wear and excessive loads. Soft receivers allow locking lug setback which is characterized by difficult bolt lift upon case extraction and cases with signs of head separation. Any firearm with excessive headspace problems should be returned to the factory for correction or to a competent gunsmith.

Many headspace problems are the result of incorrectly adjusted full-length size dies. This situation results in too much sizing, which moves the shoulder back each time the case is sized. When this problem occurs, correction can be made by backing the size die out one turn and sizing a fired case. At this point, the case is probably too long in the dimension from the head to the shoulder, and chambers with resistance. By adjusting the die inward in small increments, and at the same time checking the sized case by chambering it in the intended firearm, the correct adjustment can be obtained. The die is correctly adjusted when the action closes easily on the chambered cartridge case.

Some rifle actions, such as levers, autos, and pumps require full-length resizing of cases every time the cases are reloaded. Cases stretch more in these actions and since they lack the camming action that exists in bolt actions cases must be full length resized. Because the cases for these actions must be full-length resized every time, continued working of the brass results in considerably shorter case life.

### **DIFFICULT CHAMBERING OF CASES**

Difficult chambering is a problem with numerous sources. A few common problems are as follows: rough, dirty, or tight chambers, insufficiently sized cases, cases that are too long, and bullets that are seated too far out of the case. Where chambers are rough or dirty, polishing is the best solution. Tight chambers are a different story. Such problems should be given to a competent gunsmith or returned to the factory.

A case that is insufficiently sized, usually results in contact with the chamber and is easily recognizable by rub marks or light burnish marks that are left on the shoulder area of the case from chambering. When fired, the case expands to fill the chamber. When resized, if done incorrectly, the length from the head to the shoulder becomes too long, thus difficult chambering. The problem is easily alleviated by adjusting the sizing die body inward in small increments (1/16 turn of the die), while at the same time checking the empty case by chambering it in the firearm of intended use. When no chambering resistance is felt, the die is properly adjusted.

When cases are too long, the case mouth is forced into the throat area of the chamber and is crimped deeply into the bullet. This situation causes difficult chambering, but worse than that, it creates dangerous pressure conditions, especially when already working with maximum loads. The solution is simple. All cases should be trimmed and a closer watch on case lengths maintained. On the average, cases need trim-



ming every fourth or fifth reloading.

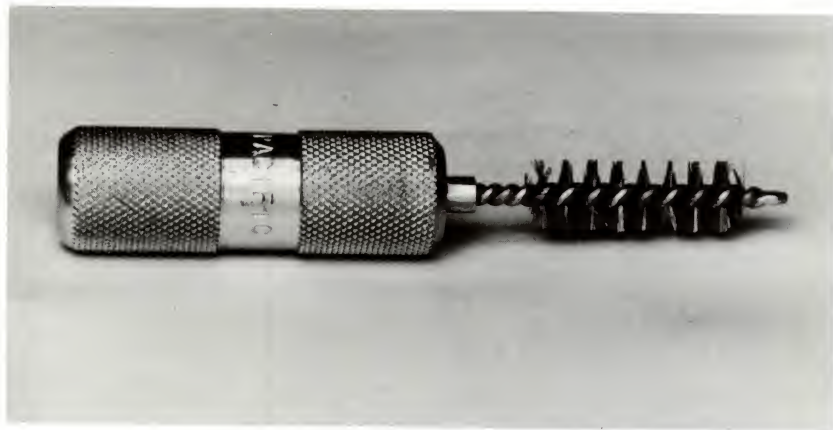
Another cause for difficult chambering, bullets seated out too far, is probably the result of incorrect adjustment during set-up. The problem is easy to recognize and easy to solve. The lands of the barrel will leave telltale rifling marks on the bullet. Bullets seated to contact the rifling raise pressures decidedly! Correct adjustment of the seating stem is all that is necessary.

### PROBLEMS WITH RESIZING

Most problems with resizing are the result of incorrect procedures. Improper lubrication, or failure to lubricate cases can create more problems than the reloader cares to imagine. The best method for lubricating cases is the use of a lube pad. The right amount, a light even coating, is easily rolled on several cases at a time. If excessive amounts of lubricant are allowed on the shoulder area, oil dents will appear during resizing. The best method is not to allow any lubricant on the shoulder area. If no lubricant is used when full-length resizing, cases can and do stick in the size die. This can be very frustrating. However, if this should happen, Pacific makes a handy gadget for the removal of stuck cases. The tool is comprised of three parts: a #7 drill, a 1/4"-20 tap and a remover body that fits



into the universal shellholder of the ram on any standard reloading press. The operation of removing the stuck cases is as follows: The die with the stuck case is removed from the press and the flash hole is then drilled and tapped with the #7 drill and 1/4"-20 tap. Then the die is reinserted in the press and the re-



mover body is installed in the ram. With the ram brought up to contact the stuck case, the remover body is then threaded into the drilled and tapped case. When properly engaged, the reloader lowers the ram and removes the case. Of course, the case is ruined and is discarded.

Often during resizing, the reloader encounters resistance as the neck of the case passes back over the expander ball. This resis-

tance is accompanied by a disconcerting "squak". The necks of the cases collect carbon residue with numerous firings and the residue build-up causes resistance. Prior to sizing, this minor problem is easily prevented by cleaning the necks with a case neck brush and then dipping the necks in a dry lubricant such as graphite. Without some sort of lubricant, unnecessary case neck stretching can occur.

### REFORMING CASES

The process of reforming cases to another caliber can be simple if the proper dies and procedures are used. When cases are sized down several steps (308 to 243 i.e.), more than one sizing operation should be used to minimize neck folds. Using the 308 necked down to 243 as an example, good intermediate sizing steps might be from 308 to 277 to 257, and finally 243. When cases are sized down a considerable amount, case necks thicken and require reaming. Necks should be reamed to the dimensions of standard factory cases. If cases are sized down as far as from 30 caliber to 22 caliber, annealing should be done halfway through the process. A note of caution: In many instances, cases that have been reformed to other calibers have less case capacity than factory cases. Therefore, loads should be reduced by 10 to 15 per cent and worked up gradually. Pacific Tool Company manufactures file-type trim dies that are very useful in many reforming situations. These dies bring the case down to the appropriate dimensions, and



with the excess neck protruding from the top of the die, the extra portion can be removed easily with a hacksaw. The case is then filed flush with the top of the die (these dies are hardened just for the purpose), followed by chamfering and deburring, and the forming operation is complete.

When fireforming reformed cases, reduced charges or maximum loads should not be used. An intermediate loading 10 to 15 per cent below maximum is the best choice. Such a load will create enough pressure to adequately form the case to the chamber. For best results the bullet should be seated to engage the lands of the rifling. This procedure will help insure proper headspacing of the fireformed case.

## DEPRIMING AND PRIMERS

Some common problems that occur during the depriming operation are the following: off-center flash holes, incorrect decapping pin size, and difficult primer removal due to military crimp. If stiff resistance is encountered when depriming a case, check for an off-center flash hole. If the flash hole is off-center, the decapping pin and/or spindle can be bent. Such cases should be discarded. Normally there are only two decapping pin diameters. Only the pin size designated by the manufacturer should be used. If a large pin is used where a small pin is required, the pin can become stuck in the flash hole. If a small pin is used where a large pin is necessary, bending of the pin can occur.

Some military cases have crimped in primers and are quite difficult to remove. In this case, a standard decapping system may not be strong enough. Heavy duty hand decapping tools are made by such companies as L. E. Wilson.

Another common problem is Berdan primed cases. Berdan cases do not have centered flash holes and require a special hook type decapping tool.

Pierced primers can result from various causes, most often the result of excessive pressure. Another cause is a weak striker spring; this problem allows the portion of the primer dented by the striker to be forced back into the firing pin hole. An added possibility is an overly large firing pin hole, which allows too much



primer cup to flow back around the firing pin. A final possibility is the use of a pistol primer in a rifle case. In this instance, the thinner cup of the pistol primer cannot stand the rifle pressures. Pierced primers are dangerous to the shooter as they permit gases to flow back in his face.

A black ring around the primer pocket usually represents excessive pressure. When lot numbers of primers are changed or different brands of primers are used and the reloader is working with a maximum load, the load should be reduced a few grains and worked up gradually. A black ring around the primer could also be a faulty primer cup, as seen in the illustration.





Primers require proper storage, handling, and seating for best results. Primers should be stored in a cool, dry place in their original containers. Primers should never be stored loosely in a jar or plastic container, since friction or static electricity could ignite the entire container of primers and cause a dangerous explosion. Primers should never be handled with oily or greasy hands, since any oil fouling can completely inactivate a primer or cause hangfires. The seating of primers is very critical to uniform ignition; primers should be seated just below flush with the case head and with enough force to seat the anvil snugly against the pellet. For this to happen, the primer cup must contact the bottom of the primer pocket. If primers are improperly seated, misfires and poor ignition will be the end result.

Primer pocket preparation is also important to good ignition and accuracy. When the primer is ignited, it leaves a carbon residue in the primer pocket. After several firings this residue becomes thick enough to preclude proper seating. For hunting situations, primer pockets should be cleaned every fourth or fifth reloading; but for target shooters, primer pockets should be cleaned every time they are reloaded.

## **POWDER**

Proper storage of powder is extremely important in maintaining consistent results. Powder should be stored in a cool, dry location with stable humidity. Humidity content in powder can greatly affect pressures. Powder that has become very dry ignites more readily and reaches maximum pressure sooner than powder with a higher moisture content. If the reloader is working with maximum loads and the powder is exceedingly dry, dangerous pressures can be obtained; when powder is allowed to collect too much moisture, ignition becomes erratic. Also, powders should not be stored in glass or clear plastic containers since light causes powder to decompose and the plastic can be chemically attacked by the solvents that remain in the powder. Decomposed powder may ignite from spontaneous combustion. Powder stored in the original containers and kept sealed will remain stable and usable for many years.

Proper powder selection should be made with numerous criteria in mind. Usually, a powder which most nearly fills the case for the intended velocity gives the highest velocity at an optimum pressure. Generally, in any given cartridge, the faster burning powders give best results with lighter bullets and the slower burning powders achieve the most desirable results with heavier bullets. Of course, the ideal situation is to find a powder that works well throughout the range of bullets with a given cartridge. In this manual, only those powders that gave optimum results with our firearms and components were listed. Other powders were tested and rejected because of numerous shortcomings. For any given cartridge, some powders have burning rates that are too fast and some have burning rates that are too slow. Powders with



burning rates that are excessively fast for an intended cartridge give velocities that are too erratic and/or too slow. Such powders do not take up enough space in the case; if powder has too much opportunity to move around in the case, ignition can be non-uniform, resulting in erratic velocities and poor accuracy. If a powder with an extremely slow burning rate is used in a case with insufficient capacity to utilize the powder's full potential, poor velocity, hangfires or extreme muzzle flash can occur. Most slow burning powders must work at near maximum pressures to prevent hangfires and muzzle flash.

Compressed powder charges can be equally inefficient. The primer flame may not penetrate the entire powder charge, with lower pressure and slower velocities the result. Should the primer flame ignite the entire powder charge properly, excess pressure is possible. At any rate, heavily compressed powder charges are not recommended.

### **BULLET PULLING**

Sometimes the reloader wishes to pull bullets for one reason or another. Numerous tools for this purpose may be employed. In situations where the bullets are not going to be reused, a pliers used in conjunction with a reloading press will do the job. For the reloader who wants to save the bullets, Pacific Tool Company manufactures a



heavy-duty collet type puller that grabs even the shortest bullet. For bullets such as wadcutters that do not protrude above the mouth of the case, inertia type pullers work quite well. Inertia pullers look similar to a hammer with two heads. In one end of the head is a collet which tightens down on the head of the case (the cartridge is inserted inside the head of the inertia puller). To remove bullets, the side of the head opposite the collet is struck smartly on a solid surface and the bullet drops out into the head of the puller (the powder likewise is saved).

## **DETERMINING MAXIMUM PRESSURE WHEN A PRESSURE GUN IS NOT AVAILABLE**

There are four prominent signs that reveal excessive pressure which the average reloader can note while working up loads. The telltale signs are flat cratered primers, ejector marks or heavy burnish marks on the case head, stiff extraction, and excessive case head expansion, which is determined by measuring the case head just ahead of the extraction groove before and after firing with a blade micrometer or a case head gauge.

The case head measurement gauge (as illustrated) is a very useful tool in determining pressure levels. However, new cases must be employed when using the tool as repeated firings work-harden brass at different levels, making case head measurement of little value. Cases are measured before and after firing to determine maximum loads. To analyze cartridge cases of various pressure ranges, we at Hornady gauged cases prior to and after firing in pressure barrels, which in turn helped determine useful standards for the case head measurement gauge. It was found that case head expansion for low pressure cartridges like the 30/30 should be .0003" to .0004" maximum, mid-pressure range cases (22/250 — 30/06), .0005" to .0006" maximum, and belted magnums, .0006" to .0007" maximum expansion. These data vary slightly with different brands of brass due to variations in thickness, hardness and composition,



but provide reliable enough information to prevent the average reloader from getting into trouble.

Generally, very flat primers with small craters around the firing pin indent (Illustration) are



indicative of high pressure. Occasionally, the firing pin hole in the bolt is excessively large and allows premature cratering, but here, the primer will still have considerable radius revealing the false pressure sign.

Ejector marks appear as bright smooth circles or bright burnish marks, and occur due to excessive pressure causing the brass to flow. If a load shows signs such as these, the powder charge should be dropped considerably. Repeated firings at this level will produce loose primer pockets and short case life and could be dangerous to the shooter.

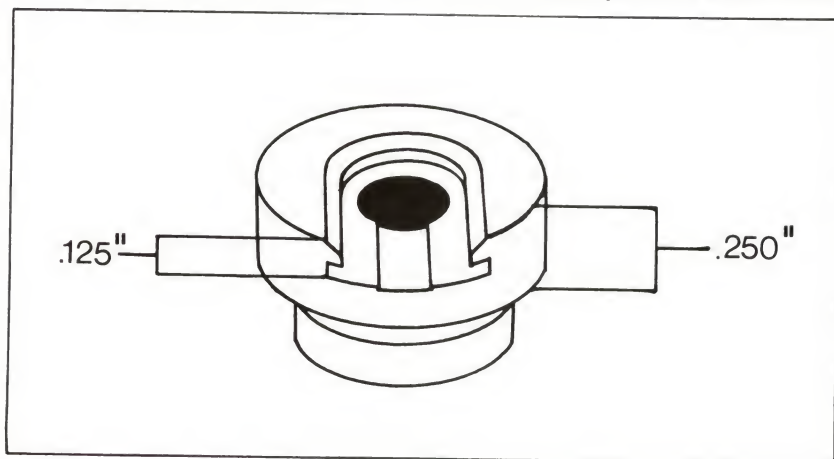
Stiff extraction generally indicates high pressure unless the chamber of the gun is slightly rough. All in all, to determine safe maximum loads, it is important to note all pressure signs.

### IMPROVE THAT ACCURACY

The following section covers tips and techniques for improving accuracy that the normal reloader can perform. Most suggestions will aid the hunter in improving accuracy in normal hunting situations while others are more suitable for varmint hunting and bench rest shooting.

Perhaps the most important factor in accuracy after proper action and barrel bedding is proper cartridge case-bullet-bore alignment. Without proper alignment, usually caused by uneven case necks, even the most accurate components and techniques are of little value. When a bullet enters the lands of the rifling several thousandths off center, it has a tendency to bend and upset, destroying the concentricity of the bullet (see the section on Concentricity), deteriorating accuracy. To prevent such inconsistencies, correct adjustment of sizing dies is important. Because standard presses and dies have coarse 7/8"x14 threads, tolerances may allow enough misalignment to affect accuracy.

Proper alignment can be accomplished in the following manner: The normal procedure for adjusting a full length size die is to adjust the die in the press such that the base of the die rests firmly on the shell holder





when the ram is fully extended. The problem lies with the coarse threads allowing the lock ring to be secured in an off center position. If the lock ring is secured while the ram is at full extension, placing light pressure on the base of the die, proper die/press alignment will be obtained. Note: Be sure critical dimensions of the shell holder are correct as illustrated. Some reloaders use a full length resizer to only partially size their cases. For this situation "squaring" of the size die in the press can be accomplished by using a small flat piece of machined steel of appropriate thickness as a spacer between the shell holder and die, and following the same directions used when adjusting for full length resizing. The same procedure used for adjusting the full length size die applies to adjusting the neck size die.

Since we have gone to all the trouble of aligning the die properly, it is imperative that we do the same with the expander ball assembly. If the expander ball passes through the neck while off center, it can cause the neck to be pulled out of alignment. The procedure is simple. With the lock ring on the expander ball assembly loosened, a case is run into the die and backed out until the expander ball enters the neck. At this point, with tension still on the system, the lock ring is secured and proper alignment is assured.

For proper alignment during bullet seating, a method similar to that of size die adjustment can be utilized. A dummy cartridge with a bullet seated to the correct cartridge overall length and showing a minimum of run-out is used. By rolling the cartridge over a smooth surface, any run-out can be visually detected (this method is necessary when no device for measuring run-out is available). With the seating stem turned out, the dummy cartridge is placed in the shell holder and run into the seating die. The seating stem is then turned down securely on the bullet and the lock ring is set.

Techniques to improve accuracy, employed by avid varmint hunters and bench rest specialists, are many and varied. One of the more important techniques used is turning case necks to uniform thickness. Case necks of factory cases will vary as much as .005" to .006" from the thinnest to thickest areas. Here again, the concept of proper bullet alignment is the goal. To improve neck concentricity, the cases may be turned on a lathe or through the use of special tools such as those provided by Lee Precision, Inc., and Marquart Precision, Inc. These tools are accurate to surprising tolerances.

Other methods of improving accuracy are as follows: Making flash holes uniform in diameter, weighing cases, and milling primer pockets to uniform depths. The purpose of weighing cases is to increase uniformity of case capacity which in turn improves uniformity of pressure and velocity. When weighing cases, no more than two to four grains variation, depending on case size, should be allowed.

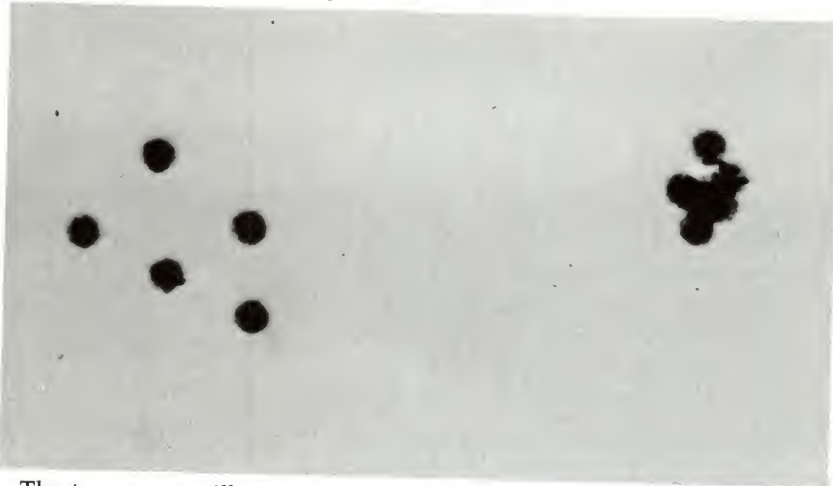
Uniformity of flash hole diameter is important for uniform ignition. Flash hole diameters average about .070", with small rifle and small



pistol diameters running slightly smaller and large pistol and large rifle diameters slightly larger. All dimensions vary considerably according to the manufacturer. A good method for making flash holes more uniform is to use a drill press with a #2 long center drill. It drills and chamfers flash holes simultaneously.

None of the previous techniques are of any value if case necks have not been turned and such techniques are only valuable to the bench rest shooter or varminteer who is looking for those last precious thousandths in group size reduction.

For maximum accuracy in any situation, seating depth of the bullet is a critical factor. Most rifles shoot their best groups when the bullet is seated such that it just touches the rifling. Those rifles that shoot better when the bullet has a "jump" at the rifling, are the "exception rather than the rule". When a bullet has room to "jump" before engaging the rifling, it is more apt to be upset while engaging the rifling. However, if the bullet is seated to touch the rifling, this jump is eliminated and accuracy should be improved; however, if the reloader is working with maximum charges, loads should be reduced, as pressures climb rapidly when seated in this manner. The process of seating the bullet to engage the rifling is fine if cartridges are singly fed and need not function through a magazine. However, not all magazines are long enough to allow bullets to be seated out that far. In the meantime, the bullet should be seated out as far as possible and still allow smooth operation through the magazine.



The two groups illustrated above were shot from a machine rest. All components were equal except the seating depth. The small group was fired with the bullets seated to touch the rifling, while the large group was fired with the bullets seated .040" from the rifling.

The final criteria for accuracy is that all components be of the highest quality. Without quality components, all the tricks in the world will not make a firearm shoot tight groups!

## WHY DATA VARIES

All manufacturers who produce reloading manuals warn the reloader to work up to maximum loads with caution. The major reason for this warning is variation in rifles and components. Primers, powder, cases, and bullets all vary to a certain degree from one lot to the next and rifles vary in chamber and bore dimensions. Temperature, humidity, and elevation are conditions that change from one area to the next. The reasons seem endless. The following paragraphs are meant to show some of the major reasons why data varies from one reloading manual to the next.

### PRIMERS

Primers play an important role in the consistency of pressure and velocity of any given cartridge. Primers can vary significantly from lot to lot and even more so as different brands are used. The following chart was constructed from test firings in the Hornady lab. All components used, except primers, are the same. The test rifle used was a Sako in 270 caliber. The components used were 55 grains of IMR 4831, Frontier cases, and Hornady 130 grain Spire Point bullets. Five shot groups were fired using each of the primers listed below.

#### TEST OF VELOCITY VARIATION & LEVEL VS. PRIMER TYPE

PRIMER TYPE	VELOCITY AVERAGE	STANDARD DEVIATION
CCI LR	2846 fps	9.13
REM. 9½	2852 fps	14.52
REM. 9½M	2873 fps	19.12
CCI LR MAG	2887 fps	17.20
FED. 210	2893 fps	20.07
WIN. 120	2907 fps	34.48
FED. 215	2917 fps	36.47

As is readily seen, the difference in obtained velocities was significant. It also appeared as if deviation was more a function of severity of ignition rather than manufacturer. The test is definitely not all inclusive, but it does serve as an indicator as to what can happen when different primers are used in any given load.

Another test using various primers was performed with a magnum caliber. The components used in this test were 150 grain Hornady bullets, Winchester cases, and 74 grains of IMR 4350. The test rifle was a Winchester Model 70 in 300 Winchester Magnum caliber.

#### TEST OF VELOCITY VARIATION & LEVEL VS. PRIMER TYPE

PRIMER TYPE	VELOCITY AVERAGE	STANDARD DEVIATION
WIN. 120	3275 fps	8.23
CCI LR MAG	3255 fps	9.01
REM. 9½M	3277 fps	12.56
CCI LR	3247 fps	22.41
FED. 210	3289 fps	23.32
FED. 215	3328 fps	23.55
REM. 9½	3280 fps	37.06

In this test the difference in velocity from one primer to the next did not seem to be affected much by severity of ignition, but more intense

ignition was necessary to maintain a low standard deviation, and this is important in obtaining good accuracy.

## POWDER

Powders differ slightly from lot to lot in loading density. Also, the deterrent coats used to regulate burning rates can vary slightly. Such variation causes velocity and pressure to change. A condition that plays a very significant role in powder variation is moisture content. The following test was performed in the Hornady lab to reveal the effects of moisture on powder. The powder used was a commercial grade and was taken directly from storage. This powder was then weighed and dried. The dried powder lost 2.5 % of its original weight. Equal charges of the original powder and the dried powder were loaded and fired through a pressure gun with the following results.

VELOCITY NORMAL POWDER	PRESSURE NORMAL POWDER	VELOCITY DRY POWDER	PRESSURE DRY POWDER
1530 fps	35,400 cup	1613 fps	46,600 cup
1536 fps	35,900 cup	1594 fps	40,300 cup
1536 fps	33,700 cup	1616 fps	43,100 cup
1540 fps	34,100 cup	1601 fps	41,200 cup
1538 fps	33,700 cup	1604 fps	39,800 cup
Average 1536 fps	Average 34,560 cup	Average 1606 fps	Average 42,200 cup

From the results shown in the table, the old adage "keep your powder dry" should be made to read "keep your powder in a cool, dry place in a sealed container".

Some of the loads listed in the Hornady manual have lightly compressed powder charges. When dropped into a cartridge case, coarse extruded powders leave large air spaces between the kernels. It becomes obvious, when working up a load, that some charges will not fit into a case by merely dropping in the powder charge. By trickling powder slowly through a funnel with drop tube attached and gently tapping the case at the same time, the case will hold more powder than originally imagined. The trickling method allows the kernels to have time to orient themselves more compactly, leaving less air space. Ball powders have finer granules and leave very little air space between kernels; for this reason, no loads listed with ball powders are compressed.

Is weighing all charges necessary? The answer to this question can be answered with "it depends...". For most situations weighing all charges of powder is not necessary. Powders that meter through a measure consistently do not show enough variation to affect velocity. Small to medium capacity cartridges using coarse extruded powders such as 4350 and 4831 are the only types that require individual weighing of charges. The following table was constructed from data obtained in our lab. The cartridge chosen for comparison was the 22/250, with three different powders comparing weighed charges to charges thrown from a Pacific Powder Measure. The averages are obtained from ten shot firings with each powder. The table distinctly shows that no significant difference is gained by weighing or throwing charges.



## WEIGHED CHARGES VS. THROWN CHARGES

	Weighed	Thrown	Weighed	Thrown	Weighed	Thrown
Powder	BL-C2	BL-C2	IMR 4895	IMR 4895	WIN 760	WIN 760
Charge	32 gr.	32 gr.	32 gr.	32 gr.	35 gr.	35 gr.
Bullet	53 gr. HP	53 gr. HP	53 gr. HP	53 gr. HP	53 gr. HP	53 gr. HP
Primer	REM 9½	REM 9½	REM 9½	REM 9½	WIN 120	WIN 120
Case	Frontier	Frontier	Frontier	Frontier	Frontier	Frontier
Average Velocity	3328 fps	3342 fps	3386 fps	3399 fps	3158 fps	3197 fps
Standard Deviation	74.41	70.82	21.85	24.11	35.54	28.28
Max. Vel. Variation	220 fps	220 fps	70 fps	84 fps	107 fps	90 fps

Temperature plays an important role in velocity and pressure. Let us use a varmint hunter who is hunting prairie dogs on a hot summer day as an example. If our hunter allows his cartridges to sit in the sun, the sun heats up the brass which in turn heats up the powder. As the temperature rises, the burning rate increases, with the end result of higher pressure and velocity, sometimes drastic. Of course, with all this variation, the rifle's zero can also change.

## CARTRIDGE CASES

Cartridge cases of different brands have varying case capacities which contribute significantly to variations in velocity and pressure. Even different lot numbers of cases of the same brand differ enough to create significant changes. The following test using Frontier and Remington cases illustrates how case capacity affects velocity and pressure. All components used, primers, powder, bullets, and cartridge overall length were the same. The components used were Federal 205 primers, 22.5 grains of BL-C2, and 53 grain Hollow Point Hornady bullets. The cartridge used was the venerable 222 Remington.

## TEST COMPARISON OF VARIOUS BRANDS OF BRASS USING IDENTICAL COMPONENTS

VELOCITY (Frontier Cases)	PRESSURE (Frontier Cases)	VELOCITY (Rem. Cases)	PRESSURE (Rem. Cases)
2841 fps	35,100 cup	2902 fps	40,700 cup
2847 fps	36,900 cup	2859 fps	38,600 cup
2795 fps	34,200 cup	2869 fps	41,100 cup
2823 fps	35,100 cup	2917 fps	43,200 cup
2803 fps	34,200 cup	2902 fps	42,400 cup
Average 2822 fps	Average 35,100 cup	Average 2890 fps	Average 41,200 cup

Large differences in pressure and velocity have a great effect on accuracy. The previous chart indicates why reloading manuals warn the reloader not to mix brands of cases.

## BULLETS

Structural differences in bullets of the same caliber and weight can affect velocity and pressure. A good example can be seen by loading two bullets of the same weight whose structures are dif-

ferent, and more important, whose lengths vary considerably. If the two bullets illustrated are seated such that the overall length of the cartridge is the same, the bullet with the spire point is sea-



ted approximately .2" deeper and, upon firing, has that much farther to jump before contacting the lands of the rifling. Often this means lower pressure and less velocity if both are loaded using identical components. If the change in velocity and pressure is great enough, the zero of the rifle can also change.



Bearing surface of the bullet can and does play an important role in pressure and velocity. Let us compare the data for the Hornady 30 caliber 180 grain Spire Point and the 30 caliber 190 grain Boat Tail Hollow Point with the 308 Winchester (refer to 308 Win. data in the reloading section). In most instances, slightly heavier powder charges can be used with the 190 grain Boat Tail Hollow Point than with the 180 grain Spire Point. The reason arises from the 180 grain bullet having a much longer bearing surface which creates more resistance when traveling along the lands of the rifling.

## RIFLES

No two rifles of the same caliber are chambered exactly to the same dimensions. Of course, one of the most critical dimensions is that of freebore. The more freebore, the greater the distance the bullet has to travel before engaging the rifling, and in most cases, accuracy is not as good. As we have said before, the amount of travel a bullet has before contacting the rifling is directly related to pressure and velocity. Barrel lengths can also play an important role in determining velocity. In the velocity range of 2000 - 4000 f.p.s., approximate velocity changes per inch of barrel, will range from 10 - 40 f.p.s. respectively. In the Hornady lab the following test was conducted comparing different brands of rifles using the same ammunition. As is readily noticeable, variations are not great, but some variation does exist.

RIFLE	CALIBER	BARREL LENGTH	AVERAGE VELOCITY (5 SHOT GROUP)
Winchester Md. 70	243	22"	3157 fps
Sako	243	22"	3190 fps
Remington 722 (Custom Barrel)	243	24"	3235 fps

Another test conducted involves barrel erosion. A rifle that has fired a large number of rounds tends to increasingly lose velocity and accuracy as throat erosion becomes more severe. This test involved one of the lab's accuracy barrels in 7mm Magnum caliber. The velocities were obtained using the same components and the same cartridge overall length. The barrel was tested when it was new and 2000 rounds later.

**VELOCITY - NEW BARREL VS. ERODED BARREL**

VELOCITY - NEW BARREL	VELOCITY - 2000 RDS. LATER
3038 fps	2729 fps
3074 fps	2765 fps
3024 fps	2769 fps
3039 fps	2765 fps
3050 fps	2762 fps
AVERAGE 3044 fps	AVERAGE 2758 fps

In conclusion, any change of components can alter results significantly enough to affect velocity, pressure, and accuracy. If several changes are made at one time, the problem merely amplifies.

It is for all the previously discussed reasons that data in reloading manuals varies. After all, the true intention of any reloading manual is to serve as a guideline that gives the reloader a place to start, a general idea of what velocities to expect, and what approximate charges will give maximum pressures. No reloading manual is absolute. If the reloader is consistent with components, reduces loads and starts over when components are changed, reloading can be a safe and rewarding endeavor.

# *Ballistics Tables*

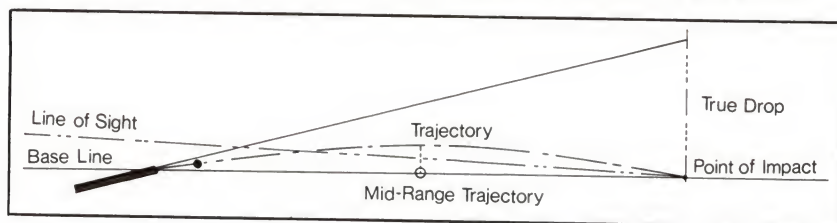
## INTRODUCTION

Exterior Ballistics refers to the flight of the bullet and the effects of numerous variables on the bullet after it leaves the muzzle of the firearm. The discussion and tables that follow offer the shooter explanations and data that will aid in improving the performance in the field or at the target range. Included are trajectory tables for all Hornady Bullets. There are trajectory tables for target shooters, and for hunters, wind drift tables, and charts that give corrections for shooting uphill/downhill.

The trajectory tables are set up in 100 fps ranges to coincide with the reloading data. For any powder-bullet-velocity combination listed in the reloading data, a corresponding trajectory is available in the tables. With this system the process of working up loads and zeroing firearms is greatly facilitated. Also, because the tables list remaining velocities and energies in increments that coincide with every aspect of shooting, choosing the best bullet to fit each situation is easily accomplished. In previous Hornady reloading manuals adjustments were not made for the ballistic coefficients to standard conditions. In this manual all ballistic coefficients are adjusted to sea level at standard conditions.

## TRAJECTORY

The trajectory of a projectile is parabolic-shaped. A line that exemplifies the actual path of a bullet after it leaves the muzzle of a firearm and its characteristics are illustrated below. The angle of departure and the bullet path are exaggerated for illustrative purposes.



The line of departure is tangent to the trajectory at the point the bullet leaves the muzzle. The angle formed by the line of departure and the base line is the angle of elevation which for small arms is generally very small. The mid-range trajectory constitutes the height of the trajectory at a point halfway between the muzzle and the point of impact.

The trajectory of a bullet can be calculated with reference to the line of departure, but in the field, the shooter's only reference is the line of sight. It is for this reason that the Hornady Trajectory Tables are constructed with reference to the line of sight.

The trajectory of any given bullet is not absolute and varies because of a multitude of factors. Muzzle velocity, time of flight, shape of the bullet, angle of muzzle upon firing, gravity, and air resistance are all physical factors that affect trajectory.



Air resistance, a factor affected by atmospheric conditions, plays a most important role in the trajectory of a bullet. The greater the velocity of a bullet, the greater the air resistance, and the faster the bullet decelerates. The shape and sectional density of a bullet contribute greatly to its ability to maintain velocity against air resistance. Shorter round nosed projectiles are greatly inferior to long pointed bullets in maintaining velocity against air resistance. The following examples, accompanied by excerpts from the Hornady Trajectory Tables indicate the importance of shape and sectional density to velocity retention and flat trajectory. By choosing equivalent muzzle velocities (3000 fps) and comparing remaining velocities at six hundred yards, using the 180 grain SP and the 180 grain RN, we can readily determine the effects of bullet shape and sectional density. As is apparent by the trajectories, two bullets with the same sectional density and weight, but having different shapes, give markedly different results (100 yard zero and 600 yard trajectory: 180 grain SP yields -81.5", 180 grain RN yields -121.4").

**SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .239**

30 CALIBER (.308" DIAMETER) 180 GRAIN ROUND NOSE

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2600	2235	1908	1620	1365	1170
ENERGY (ft. lbs.)	3598	2702	1997	1456	1049	745	547
TRAJECTORY: 100 yd. Zero	-1.5"	0.0	-3.7"	-14.6"	-35.1"	-68.9"	-121.4"

**SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .431**

30 CALIBER (.308" DIAMETER) 180 GRAIN SPIRE POINT

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2774	2558	2353	2161	1979	1809
ENERGY (ft. lbs.)	3598	3076	2616	2214	1867	1566	1308
TRAJECTORY: 100 yd. Zero	-1.5"	0.0	-3.1"	-11.6"	-26.6"	-49.4"	-81.5"

Every bullet is assigned a numerical value that gives the bullet an index which ranks the bullet according to its ability to overcome air resistance. This numerical value is a ratio that compares that particular bullet to a standard projectile of known trajectory characteristics. The ratio is known as the Ballistic Coefficient (abbr. B.C.). The ratio compares the drag of the bullet (resistance caused by the bullet's travel through air) to the drag of the standard projectile.

$$\text{B.C.} = \frac{\text{Drag of std. projectile}}{\text{Drag of test projectile}}$$

The standard projectile with which all Hornady Bullets were compared was the projectile that was used in the Krupp Test Firings of 1881. The standard projectile has proven an excellent model for calculation of ballistics tables for most small arms projectiles. This bullet was three calibers long with an ogival head of two caliber radius and was used as the basis for computation of the Mayevski drag function used in the Ingalls Ballistics Tables. All ballistic coefficients for Hornady Bullets were computed from actual test firings performed in our 200 yard underground range.

Atmospheric conditions induce changes in air resistance which in turn creates an apparent change in the ballistic coefficient. As temperature, humidity, and altitude increase and as barometric pressure decreases, the bullet behaves as if it has a higher B.C. than in standard conditions. When the above conditions are reversed, the B.C. appears to fall. The following chart indicates the effects atmospheric conditions have on the ballistic coefficient and the flight of the bullet. Three identical bullets, 30 caliber 150 grain Spire Points, were fired at the same muzzle velocity, but in different atmospheric conditions. Under standard conditions (Altitude — sea level, 59°F, 29.58" Hg., and 78% relative humidity), the ballistic coefficient of the bullet is .358.

#### TEST #1

##### BALLISTIC COEFFICIENT = .358

Conditions: Altitude = Sea Level, Temperature = 59°F, Barometric Pressure = 29.53" Hg., Relative Humidity = 78%

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.
VELOCITY (fps)	2900	2634	2384	2152	1935	1735
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-3.5"	-13.3"	-31.0"	-57.7"

#### TEST #2

##### BALLISTIC COEFFICIENT = .446

Conditions: Altitude = 5000 ft., Temperature = 75°F, Barometric Pressure = 24.59" Hg., Relative Humidity = 78%.

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.
VELOCITY (fps)	2900	2685	2479	2284	2100	1926
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-3.3"	-12.3"	-27.9"	-51.5"

#### TEST #3

##### BALLISTIC COEFFICIENT = .311

Conditions: Altitude = Sea Level, Temperature = 10°F, Barometric Pressure = 30.60" Hg., Relative Humidity = 20%.

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.
VELOCITY (fps)	2900	2594	2309	2047	1806	1590
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-3.6"	-13.8"	-32.4"	-61.4"

All ballistic coefficients listed in the Hornady handbook are corrected to standard conditions for temperature, pressure, and relative humidity (59°F, 29.53" Hg., and 78% relative humidity). Due to seasonal changes in temperature, humidity, and barometric pressure, it is rare for the ballistic coefficient recorded during firings to correspond to the actual ballistic coefficient at standard conditions. As a result, correction factors can be applied to determine the ballistic coefficient in other conditions.

For clarity, we will discuss the process of applying correction factors to obtain ballistic coefficients for non-standard conditions. The drag on a bullet is almost solely dependent on air density. To correct for air density, we must know the air density at the shooting site and the standard air density for that area. The correction factor for air density is the ratio

$$\frac{\text{Standard Pressure}}{\text{Shooting Site Pressure}}$$

which is used as a multiplier. The correction factor for temperature is

$$\frac{\text{Shooting Site Temperature} + 459.4}{\text{Standard Temperature} + 459.4}$$

(absolute zero is  $-459.4^{\circ}\text{F}$  and we must use this value to place all temperatures in the absolute Rankine scale); it is also used as a multiplier. While corrections can be made for humidity variations, the corrections are tedious and the error brought about by ignoring such variations is negligible in almost all circumstances. Using the previously discussed equations, a sample problem is worked below. Example of correcting a ballistic coefficient:

Present Ballistic Coefficient = .299

Shooting Site Conditions: Temperature  $85^{\circ}\text{F}$ , Barometric Pressure 28.75" Hg., and Relative Humidity 85%

Standard Conditions: Temperature  $59^{\circ}\text{F}$ , Barometric Pressure 29.53" Hg., and Relative Humidity 78%.

$$\text{Temperature correction factor} = \frac{85 + 459.4}{59 + 459.4} = 1.050$$

$$\text{Barometric pressure correction factor} = \frac{29.53}{28.75} = 1.027$$

$$\text{New Ballistic Coefficient} = \text{Temp. factor} \times \text{Baro. factor} \times \text{present B.C.} = 1.050 \times 1.027 \times .299 = .322$$

After finding the ballistic coefficient, the shooter can enter the Ballistic Tables and find a bullet with a similar B.C. to find his new trajectory. If the shooter is going to change substantially from the conditions in which the rifle was zeroed, he should take extra ammunition along and rezero when he arrives. In conclusion, we can see that for practical ranges up to and including 300 yards, corrections are unnecessary, since the shooter in a hunting situation will be hard pressed to find a shooting position steady enough to account for a mere inch and a half at 300 yards. Again if the shooter feels corrections are necessary, his wisest choice is to take enough ammunition along to rezero.

## APPLICATION OF THE TRAJECTORY TABLES

The trajectory tables provide several services to the shooter. From these tables the reloader can obtain information that allows him to choose the best bullet for any given shooting situation. Down range velocities, energies, and five or six choices for zeroing are immediately at the shooter's disposal. In the following paragraphs we will discuss



some practical shooting situations that illustrate the many uses of the Ballistics Tables.

In the following example, we will assume a shooter has purchased a new rifle in 6mm Remington caliber. He wishes to choose the correct bullet and zero the rifle at a range appropriate for his main objective, prairie dogs at ranges from 200 to 400 yards. The conditions this hunter will encounter will be hot temperatures and possibly a ten mile per hour wind. For this purpose this shooter must choose an appropriate bullet-load combination that will give him the flattest trajectory with the least amount of wind drift. There are three Hornady varmint bullets to choose from: the 70 grain SP, 75 grain HP, and 87 grain SP. By using a combination of the reloading data, the ballistics tables, and the wind drift tables, he can compare all three bullets and decide which bullet best suits his particular situation. The shooter will choose velocities from the reloading data that are one increment below maximum to allow for ammunition exposure to very warm temperatures. The corresponding velocities are: 70 grain SP - 3400 fps, 75 grain HP - 3400 fps, and 87 grain SP - 3200 fps. The following three excerpts from the Ballistics Tables are used to compare trajectories.

6mm (.243" DIAMETER) 70 GRAIN SPIRE POINT

**SECTIONAL DENSITY: .169 BALLISTIC COEFFICIENT: .278**

RANGE	Muzzle	100 yds	200 yds.	300 yds.	400 yds.
VELOCITY (fps)	3400	3028	2680	2358	2064
ENERGY (ft. lbs.)	1797	1426	1117	864	662
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-2.3"	-9.6"	-23.2"
TRAJECTORY: 200 yd. zero	-1.5"	1.2"	0.0	-6.1"	-18.5"
TRAJECTORY: 300 yd. zero	-1.5"	3.2"	4.1"	0.0	-10.3"
TRAJECTORY: 400 yd. zero	-1.5"	5.8"	9.3"	7.8"	0.0
TRAJECTORY: 500 yd. zero	-1.5"	9.1"	15.8"	17.5"	-13.0"

6mm (.243 DIAMETER) 75 GRAIN HOLLOW POINT

**SECTIONAL DENSITY: .181 BALLISTIC COEFFICIENT: .299**

RANGE	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
VELOCITY (fps)	3400	3054	2728	2423	2143
ENERGY (ft. lbs.)	1926	1553	1240	978	765
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-2.3"	-9.3"	-22.3"
TRAJECTORY: 200 yd. zero	-1.5"	1.2"	0.0	-5.8"	-17.6"
TRAJECTORY: 300 yd. zero	-1.5"	3.1"	3.9"	0.0	-9.8"
TRAJECTORY: 400 yd. zero	-1.5"	5.6"	8.8"	7.4"	0.0
TRAJECTORY: 500 yd. zero	-1.5"	8.7"	15.0"	16.6"	12.3"

6mm (.243 DIAMETER) 87 GRAIN SPIRE POINT

**SECTIONAL DENSITY: .210 BALLISTIC COEFFICIENT: .355**

RANGE	Muzzle	100 yds.	200 yds.	300 yds.	400 yds.
VELOCITY (fps)	3200	2917	2648	2395	2160
ENERGY (ft. lbs.)	1979	1644	1355	1109	901
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-2.6"	-10.3"	-24.4"
TRAJECTORY: 200 yd. zero	-1.5"	1.3"	0.0	-6.3"	-19.1"
TRAJECTORY: 300 yd. zero	-1.5"	3.5"	4.3"	0.0	-10.6"
TRAJECTORY: 400 yd. zero	-1.5"	6.1"	9.6"	8.0"	0.0
TRAJECTORY: 500 yd. zero	-1.5"	9.2"	15.7"	17.2"	12.3"

By choosing a common zero for all three bullets (in this case we'll use a 200 yard zero), we can plainly see that by the time each bullet reaches the range of 400 yards, the 75 grain HP still has a slightly flatter trajectory. Now, by turning to the Wind Drift Tables, we find that by



comparing wind drifts at 400 yards (the ballistic coefficients used are the closest B.C.'s listed in the tables), the 87 grain SP gives the best results (70 grain SP: 18.5", 75 grain HP: 16.2", and 87 grain SP: 14.3").

Wind Drift Table excerpt for 6mm data in Application of Trajectory Tables Section:

**BALLISTIC COEFFICIENT = .270**

Range	0	100 yds.	200 yds.	300 yds.	400 yds.
Velocity	3400 fps	3017 fps	2658 fps	2326 fps	2025 fps
Wind Drift	0	.9"	4.0"	9.8"	18.5"

**BALLISTIC COEFFICIENT = .300**

Range	0	100 yds.	200 yds.	300 yds.	400 yds.
Velocity	3400 fps	3054 fps	2727 fps	2422 fps	2142 fps
Wind Drift	0	.8"	3.6"	8.6"	16.2"

**BALLISTIC COEFFICIENT = .360**

Range	0	100 yds.	200 yds.	300 yds.	400 yds.
Velocity	3200 fps	2920 fps	2635 fps	2401 fps	2167 fps
Wind Drift	0	.7"	3.2"	7.7"	14.3"

Because the 87 grain SP also has the most remaining energy, plus a slight advantage in remaining velocity with less wind drift, we will select it as the best overall choice.

The next step is to decide on the optimum zero range. Since the targets are going to vary considerably in distances, the shooter must inspect the possibilities of zeroing at three different ranges: 200 yds., 300 yds., and 400 yds. The size of the intended target, a prairie dog, at which the hunter will be shooting, is approximately 10" in length and 2½" in diameter. If the 200 yard zero is chosen, our tables tell us the amount of hold over required at 400 yards (19.1") would allow too much room for error. Similarly, a 400 yard zero would create too much error in holding under the target at closer ranges. However, for a 300 yard zero, the maximum distance necessary to hold under is little more than the width of the prairie dog, and the maximum hold over is no more than the length of the target. These are estimations that the shooter can make with a relatively high degree of accuracy.

## CHANGING ZEROES

Another problem that confronts many shooters is changing zeroes. For this situation we will choose a hunter who has his rifle zeroed at 100 yards, but wishes to be zeroed at 200 yards. His problem, as happens with a great many shooters, is that his shooting range is only 100 yards long. However, with the Hornady Tables there is no problem. Since this shooter is using the Hornady 150 grain SP at 2600 fps, he merely finds that part of the table for a .308" diameter 150 grain SP bullet and notes the 100 yard trajectory when zeroed at 200 yards (see example below). He finds that the trajectory is a plus 2.5". All that is left, is to

adjust his sights to shoot 2.5" high at 100 yards and he is ready to go hunting.

30 CALIBER (.308" DIAMETER) 150 GRAIN SPIRE POINT

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .358

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2352	2122	1908	1710	1533	1364
ENERGY (ft. lbs.)	2252	1844	1500	1213	974	783	620
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-5.0"	-17.7"	-40.4"	-75.2"	-124.9"
TRAJECTORY: 200 yd. zero	-1.5"	2.5"	0.0	-10.2"	-30.4"	-62.7"	-109.9"
TRAJECTORY: 300 yd. zero	-1.5"	5.9"	6.8"	0.0	-16.7"	-45.6"	-89.3"
TRAJECTORY: 400 yd. zero	-1.5"	10.1"	15.2"	12.5"	0.0	-24.7"	-64.2"
TRAJECTORY: 500 yd. zero	-1.5"	15.1"	25.1"	27.4"	19.8"	0.0	-34.6"
TRAJECTORY: 600 yd. zero	-1.5"	20.8"	36.6"	44.7"	42.9"	28.9"	0.0

Another question this shooter might have is "Where do I hold if my target is at 250 yards and I'm zeroed at 200 yards?" By interpolating the data (zero at 200 yards and -10.2" at 300 yards) we can assume that our trajectory will be approximately one-half the drop (5.1") from 200 to 300 yards. This is not exact, but is close enough for hunting situations. Therefore, he must hold approximately 5.1" high to hit dead on at 250 yards.

## TRAJECTORY TABLES (SHORT RANGE RIFLE)

17 CALIBER (.172" Dia.) 25 GRAIN HOLLOW POINT

SECTIONAL DENSITY: .121 BALLISTIC COEFFICIENT: .190

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	4100	3795	3504	3225	2959	2705	2465
ENERGY (ft. lbs.)	933	800	682	577	468	406	337
TRAJ: 50 yd. zero	-1.5"	0.0"	.9"	1.1"	.4"	-1.3"	-4.2"
TRAJ: 100 yd. zero	-1.5"	-.4"	0.0"	-.2"	-1.4"	-3.5"	-6.9"
TRAJ: 150 yd. zero	-1.5"	-.3"	.2"	0.0"	-1.0"	-3.0"	-6.3"
TRAJ: 200 yd. zero	-1.5"	0.0"	.7"	.8"	0.0"	-1.7"	-4.8"
TRAJ: 250 yd. zero	-1.5"	.3"	1.4"	1.9"	1.4"	0.0"	-2.6"
TRAJ: 300 yd. zero	-1.5"	.7"	2.3"	3.2"	3.2"	2.2"	0.0"
VELOCITY (fps)	4000	3700	3412	3137	2875	2626	2390
ENERGY (ft. lbs.)	888	760	646	547	459	383	317
TRAJ: 50 yd. zero	-1.5"	0.0"	.9"	1.0"	.1"	-1.7"	-4.9"
TRAJ: 100 yd. zero	-1.5"	-.4"	0.0"	-.3"	-1.5"	-3.8"	-7.4"
TRAJ: 150 yd. zero	-1.5"	-.3"	.2"	0.0"	-1.1"	-3.3"	-6.8"
TRAJ: 200 yd. zero	-1.5"	0.0"	.8"	.8"	0.0"	-1.8"	-5.1"
TRAJ: 250 yd. zero	-1.5"	.3"	1.5"	2.0"	1.5"	0.0"	-2.8"
TRAJ: 300 yd. zero	-1.5"	.8"	2.5"	3.4"	3.4"	2.4"	0.0"
VELOCITY (fps)	3900	3604	3321	3050	2792	2547	2317
ENERGY (ft. lbs.)	845	721	612	517	433	360	298
TRAJ: 50 yd. zero	-1.5"	0.0"	.8"	.8"	-.1"	-2.2"	-5.7"
TRAJ: 100 yd. zero	-1.5"	-.4"	0.0"	-.4"	-1.7"	-4.2"	-8.1"
TRAJ: 150 yd. zero	-1.5"	-.2"	.3"	0.0"	-1.2"	-3.6"	-7.3"
TRAJ: 200 yd. zero	-1.5"	0.0"	.9"	.9"	0.0"	-2.0"	-5.5"
TRAJ: 250 yd. zero	-1.5"	.4"	1.7"	2.2"	1.7"	0.0"	-3.0"
TRAJ: 300 yd. zero	-1.5"	1.0"	2.7"	3.7"	3.7"	2.6"	0.0"
VELOCITY (fps)	3800	3508	3229	2963	2709	2468	2243
ENERGY (ft. lbs.)	802	683	579	487	407	338	279
TRAJ: 50 yd. zero	-1.5"	0.0"	.8"	.7"	-.3"	-2.6"	-6.4"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.4"	-1.9"	-4.6"	-8.8"
TRAJ: 150 yd. zero	-1.5"	-.2"	.3"	0.0"	-1.3"	-3.8"	-7.9"
TRAJ: 200 yd. zero	-1.5"	.1"	1.0"	1.0"	0.0"	-2.2"	-5.9"
TRAJ: 250 yd. zero	-1.5"	.5"	1.9"	2.3"	1.8"	0.0"	-3.2"
TRAJ: 300 yd. zero	-1.5"	1.1"	2.9"	4.0"	4.0"	2.7"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3700	3412	3138	2876	2626	2391	2171
ENERGY (ft. lbs.)	760	647	547	459	383	317	262
TRAJ: 50 yd. zero	- 1.5"	0.0"	.7"	.6"	- .6"	- 3.1"	- 7.3"
TRAJ: 100 yd. zero	- 1.5"	-.3"	0.0"	-.5"	- 2.1"	- 5.0"	- 9.5"
TRAJ: 150 yd. zero	- 1.5"	-.1"	.4"	0.0"	- 1.4"	- 4.1"	- 8.4"
TRAJ: 200 yd. zero	- 1.5"	.2"	1.1"	1.1"	0.0"	- 2.3"	- 6.3"
TRAJ: 250 yd. zero	- 1.5"	.6"	2.0"	2.5"	1.9"	0.0"	- 3.5"
TRAJ: 300 yd. zero	- 1.5"	1.2"	3.2"	4.2"	4.3"	2.9"	0.0"
VELOCITY (fps)	3600	3317	3046	2789	2544	2314	2099
ENERGY (ft. lbs.)	720	611	515	432	359	297	245
TRAJ: 50 yd. zero	- 1.5"	0.0"	.7"	.4"	- 1.0"	- 3.8"	- 8.3"
TRAJ: 100 yd. zero	- 1.5"	-.3"	0.0"	-.6"	- 2.3"	- 5.5"	- 10.4"
TRAJ: 150 yd. zero	- 1.5"	-.1"	.4"	0.0"	- 1.5"	- 4.5"	- 9.2"
TRAJ: 200 yd. zero	- 1.5"	.3"	1.2"	1.2"	0.0"	- 2.5"	- 6.8"
TRAJ: 250 yd. zero	- 1.5"	.8"	2.2"	2.7"	2.1"	0.0"	- 3.7"
TRAJ: 300 yd. zero	- 1.5"	1.4"	3.5"	4.6"	4.6"	3.1"	0.0"
VELOCITY (fps)	3500	3221	2955	2702	2462	2237	2027
ENERGY (ft. lbs.)	680	576	485	405	337	278	228
TRAJ: 50 yd. zero	- 1.5"	0.0"	.6"	.3"	- 1.3"	- 4.3"	- 9.1"
TRAJ: 100 yd. zero	- 1.5"	-.3"	0.0"	-.6"	- 2.6"	- 5.9"	- 11.0"
TRAJ: 150 yd. zero	- 1.5"	0.0"	.5"	0.0"	- 1.7"	- 4.8"	- 9.6"
TRAJ: 200 yd. zero	- 1.5"	.3"	1.3"	1.3"	0.0"	- 2.6"	- 7.1"
TRAJ: 250 yd. zero	- 1.5"	.9"	2.4"	2.9"	2.1"	0.0"	- 3.8"
TRAJ: 300 yd. zero	- 1.5"	1.5"	3.7"	4.8"	4.7"	3.2"	0.0"
VELOCITY (fps)	3400	3126	2864	2615	2381	2161	1956
ENERGY (ft. lbs.)	642	543	456	380	315	259	213
TRAJ: 50 yd. zero	- 1.5"	0.0"	.6"	.1"	- 1.6"	- 4.9"	- 10.1"
TRAJ: 100 yd. zero	- 1.5"	-.2"	0.0"	-.7"	- 2.8"	- 6.4"	- 11.8"
TRAJ: 150 yd. zero	- 1.5"	0.0"	.5"	0.0"	- 1.7"	- 5.1"	- 10.3"
TRAJ: 200 yd. zero	- 1.5"	.4"	1.4"	1.3"	0.0"	- 2.8"	- 7.6"
TRAJ: 250 yd. zero	- 1.5"	1.0"	2.6"	3.1"	2.3"	0.0"	- 4.1"
TRAJ: 300 yd. zero	- 1.5"	1.7"	4.0"	5.2"	5.1"	3.5"	0.0"
VELOCITY (fps)	3300	3030	2773	2529	2300	2086	1886
ENERGY (ft. lbs.)	605	510	427	355	294	242	198
TRAJ: 50 yd. zero	- 1.5"	0.0"	.5"	0.0"	- 2.0"	- 5.7"	- 11.3"
TRAJ: 100 yd. zero	- 1.5"	-.2"	0.0"	-.8"	- 3.1"	- 7.0"	- 12.9"
TRAJ: 150 yd. zero	- 1.5"	0.0"	.6"	0.0"	- 1.9"	- 5.5"	- 11.1"
TRAJ: 200 yd. zero	- 1.5"	.5"	1.6"	1.5"	0.0"	- 3.1"	- 8.2"
TRAJ: 250 yd. zero	- 1.5"	1.1"	2.8"	3.3"	2.5"	0.0"	- 4.4"
TRAJ: 300 yd. zero	- 1.5"	1.9"	4.3"	5.6"	5.5"	3.7"	0.0"
VELOCITY (fps)	3200	2935	2683	2444	2220	2011	1817
ENERGY (ft. lbs.)	569	478	400	332	274	225	183
TRAJ: 50 yd. zero	- 1.5"	0.0"	.5"	-.2"	- 2.5"	- 6.5"	- 12.7"
TRAJ: 100 yd. zero	- 1.5"	-.2"	0.0"	-.9"	- 3.4"	- 7.7"	- 14.1"
TRAJ: 150 yd. zero	- 1.5"	.1"	.7"	0.0"	- 2.1"	- 6.0"	- 12.1"
TRAJ: 200 yd. zero	- 1.5"	.6"	1.7"	1.6"	0.0"	- 3.3"	- 8.9"
TRAJ: 250 yd. zero	- 1.5"	1.3"	3.1"	3.6"	2.7"	0.0"	- 4.8"
TRAJ: 300 yd. zero	- 1.5"	2.1"	4.7"	6.1"	5.9"	4.0"	0.0"

**22 CALIBER (.222" Dia.) 40 GRAIN JET**

SECTIONAL DENSITY: .116 BALLISTIC COEFFICIENT: .100

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3100	2616	2183	1803	1472	1212	1049
ENERGY (ft. lbs.)	854	608	423	289	193	131	98
TRAJ: 50 yd. zero	- 1.5"	0.0"	.2"	- 1.4"	- 5.8"	- 14.2"	- 27.8"
TRAJ: 100 yd. zero	- 1.5"	-.1"	0.0"	- 1.7"	- 6.2"	- 14.7"	- 28.4"
TRAJ: 150 yd. zero	- 1.5"	-.5"	1.2"	0.0"	- 3.8"	- 11.8"	- 24.9"
TRAJ: 200 yd. zero	- 1.5"	1.5"	3.1"	2.9"	0.0"	- 6.9"	- 19.1"
TRAJ: 250 yd. zero	- 1.5"	2.8"	5.9"	7.1"	5.6"	0.0"	- 10.7"
TRAJ: 300 yd. zero	- 1.5"	4.6"	9.5"	12.5"	12.8"	9.0"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3000	2525	2103	1734	1416	1174	1026
ENERGY (ft. lbs.)	800	567	393	267	178	122	93
TRAJ: 50 yd. zero	-1.5"	0.0"	.1"	-1.7"	-6.6"	-15.7"	-30.3"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.9"	-6.8"	-15.9"	-30.6"
TRAJ: 150 yd. zero	-1.5"	-.6"	1.3"	0.0"	-4.2"	-12.7"	-26.7"
TRAJ: 200 yd. zero	-1.5"	1.7"	3.4"	3.2"	0.0"	-7.4"	-20.4"
TRAJ: 250 yd. zero	-1.5"	3.1"	6.4"	7.6"	6.0"	0.0"	-11.5"
TRAJ: 300 yd. zero	-1.5"	5.1"	10.2"	13.4"	13.6"	9.6"	0.0"
VELOCITY (fps)	2900	2435	2024	1666	1360	1140	1004
ENERGY (ft. lbs.)	747	527	364	247	164	115	90
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-2.1"	-7.5"	-17.5"	-33.3"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-2.1"	-7.5"	-17.4"	-33.3"
TRAJ: 150 yd. zero	-1.5"	.7"	1.4"	0.0"	-4.6"	-13.8"	-28.9"
TRAJ: 200 yd. zero	-1.5"	1.9"	3.8"	3.5"	0.0"	-8.1"	-22.0"
TRAJ: 250 yd. zero	-1.5"	3.5"	7.0"	8.3"	6.5"	0.0"	-12.3"
TRAJ: 300 yd. zero	-1.5"	5.6"	11.1"	14.5"	14.7"	10.3"	0.0"
VELOCITY (fps)	2800	2346	1946	1600	1308	1104	981
ENERGY (ft. lbs.)	697	489	336	227	152	108	85
TRAJ: 50 yd. zero	-1.5"	0.0"	-.1"	-2.6"	-8.5"	-19.2"	-36.3"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.4"	-8.2"	-18.9"	-35.9"
TRAJ: 150 yd. zero	-1.5"	.9"	1.6"	0.0"	-5.0"	-14.8"	-31.0"
TRAJ: 200 yd. zero	-1.5"	2.1"	4.1"	3.8"	0.0"	-8.6"	-23.5"
TRAJ: 250 yd. zero	-1.5"	3.9"	7.6"	8.9"	6.9"	0.0"	-13.1"
TRAJ: 300 yd. zero	-1.5"	6.1"	12.0"	15.5"	15.7"	11.0"	0.0"
VELOCITY (fps)	2700	2257	1868	1535	1258	1075	962
ENERGY (ft. lbs.)	648	453	310	209	141	103	82
TRAJ: 50 yd. zero	-1.5"	0.0"	-.2"	-3.0"	-9.5"	-21.1"	-39.1"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.6"	-9.0"	-20.5"	-38.4"
TRAJ: 150 yd. zero	-1.5"	1.0"	1.8"	0.0"	-5.4"	-16.0"	-33.0"
TRAJ: 200 yd. zero	-1.5"	2.4"	4.5"	4.1"	0.0"	-9.2"	-24.8"
TRAJ: 250 yd. zero	-1.5"	4.2"	8.2"	9.7"	7.4"	0.0"	-13.7"
TRAJ: 300 yd. zero	-1.5"	6.5"	12.8"	16.5"	16.6"	11.5"	0.0"
VELOCITY (fps)	2600	2169	1791	1462	1205	1044	940
ENERGY (ft. lbs.)	601	418	285	190	129	97	78
TRAJ: 50 yd. zero	-1.5"	0.0"	-.3"	-3.5"	-10.7"	-23.4"	-42.7"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.9"	-9.9"	-22.4"	-41.6"
TRAJ: 150 yd. zero	-1.5"	1.2"	2.0"	0.0"	-6.0"	-17.5"	-35.7"
TRAJ: 200 yd. zero	-1.5"	2.7"	5.0"	4.5"	0.0"	-10.0"	-26.6"
TRAJ: 250 yd. zero	-1.5"	4.7"	9.0"	10.5"	8.0"	0.0"	-14.6"
TRAJ: 300 yd. zero	-1.5"	7.1"	13.9"	17.9"	17.8"	12.2"	0.0"
VELOCITY (fps)	2500	2081	1715	1400	1164	1020	921
ENERGY (ft. lbs.)	555	385	261	174	120	92	75
TRAJ: 50 yd. zero	-1.5"	0.0"	-.5"	-4.1"	-12.2"	-26.0"	-46.9"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-3.3"	-11.0"	-24.5"	-45.2"
TRAJ: 150 yd. zero	-1.5"	1.4"	2.2"	0.0"	-6.6"	-19.0"	-38.6"
TRAJ: 200 yd. zero	-1.5"	3.1"	5.5"	5.0"	0.0"	-10.7"	-28.6"
TRAJ: 250 yd. zero	-1.5"	5.2"	9.8"	11.4"	8.6"	0.0"	-15.7"
TRAJ: 300 yd. zero	-1.5"	7.8"	15.1"	19.3"	19.1"	13.1"	0.0"
VELOCITY (fps)	2400	1993	1640	1339	1127	996	900
ENERGY (ft. lbs.)	512	353	239	159	113	88	72
TRAJ: 50 yd. zero	-1.5"	0.0"	-.7"	-4.7"	-13.5"	-28.4"	-50.4"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.6"	-12.0"	-26.5"	-48.1"
TRAJ: 150 yd. zero	-1.5"	1.6"	2.4"	0.0"	-7.1"	-20.4"	-40.8"
TRAJ: 200 yd. zero	-1.5"	3.4"	6.0"	5.4"	0.0"	-11.4"	-30.1"
TRAJ: 250 yd. zero	-1.5"	5.7"	10.8"	12.3"	9.2"	0.0"	-16.3"
TRAJ: 300 yd. zero	-1.5"	8.4"	16.1"	20.4"	20.1"	13.6"	0.0"
VELOCITY (fps)	2300	1905	1566	1282	1089	971	879
ENERGY (ft. lbs.)	470	323	218	146	105	84	69
TRAJ: 50 yd. zero	-1.5"	0.0"	-.9"	-5.4"	-15.1"	-31.3"	-54.9"
TRAJ: 100 yd. zero	-1.5"	.5"	0.0"	-4.0"	-13.2"	-28.9"	-52.1"
TRAJ: 150 yd. zero	-1.5"	1.8"	2.7"	0.0"	-7.7"	-22.1"	-43.9"
TRAJ: 200 yd. zero	-1.5"	3.8"	6.6"	5.8"	0.0"	-12.4"	-32.3"
TRAJ: 250 yd. zero	-1.5"	6.3"	11.6"	13.3"	10.0"	0.0"	-17.3"
TRAJ: 300 yd. zero	-1.5"	9.2"	17.4"	22.0"	21.5"	14.5"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2200	1818	1484	1221	1053	946	858
ENERGY (ft. lbs.)	430	294	196	132	99	80	65
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.1"	-6.4"	-17.0"	-34.5"	-59.9"
TRAJ: 100 yd. zero	-1.5"	.6"	0.0"	-4.6"	-14.6"	-31.5"	-56.3"
TRAJ: 150 yd. zero	-1.5"	2.1"	3.1"	0.0"	-8.5"	-23.8"	-47.1"
TRAJ: 200 yd. zero	-1.5"	4.3"	7.3"	6.4"	0.0"	-13.2"	-34.3"
TRAJ: 250 yd. zero	-1.5"	6.9"	12.6"	14.3"	10.6"	0.0"	-18.4"
TRAJ: 300 yd. zero	-1.5"	10.0"	18.8"	23.6"	22.9"	15.4"	0.0"
VELOCITY (fps)	2100	1731	1413	1173	1025	925	839
ENERGY (ft. lbs.)	392	266	177	122	93	76	63
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.4"	-7.3"	-19.2"	-38.0"	-65.2"
TRAJ: 100 yd. zero	-1.5"	.7"	0.0"	-5.1"	-16.2"	-34.3"	-60.8"
TRAJ: 150 yd. zero	-1.5"	2.5"	3.4"	0.0"	-9.3"	-25.7"	-50.4"
TRAJ: 200 yd. zero	-1.5"	4.8"	8.1"	7.0"	0.0"	-14.0"	-36.4"
TRAJ: 250 yd. zero	-1.5"	7.6"	13.7"	15.4"	11.2"	0.0"	-19.6"
TRAJ: 300 yd. zero	-1.5"	10.9"	20.3"	25.2"	24.3"	16.4"	0.0"
VELOCITY (fps)	2000	1646	1344	1130	998	901	819
ENERGY (ft. lbs.)	355	241	160	113	88	72	60
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.7"	-8.3"	-21.2"	-41.6"	-71.0"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-5.6"	-17.6"	-37.1"	-65.7"
TRAJ: 150 yd. zero	-1.5"	2.8"	3.8"	0.0"	-10.0"	-27.6"	-54.3"
TRAJ: 200 yd. zero	-1.5"	5.3"	8.8"	7.6"	0.0"	-15.0"	-39.1"
TRAJ: 250 yd. zero	-1.5"	8.3"	14.9"	16.6"	12.1"	0.0"	-21.0"
TRAJ: 300 yd. zero	-1.5"	11.8"	21.9"	27.2"	26.1"	17.6"	0.0"
VELOCITY (fps)	1900	1562	1278	1087	970	877	798
ENERGY (ft. lbs.)	321	217	145	105	84	68	57
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.1"	-9.5"	-23.6"	-45.7"	-77.5"
TRAJ: 100 yd. zero	-1.5"	1.1"	0.0"	-6.3"	-19.3"	-40.3"	-71.0"
TRAJ: 150 yd. zero	-1.5"	3.2"	4.2"	0.0"	-10.9"	-29.8"	-58.4"
TRAJ: 200 yd. zero	-1.5"	5.9"	9.7"	8.2"	0.0"	-16.1"	-42.0"
TRAJ: 250 yd. zero	-1.5"	9.2"	16.1"	17.9"	12.9"	0.0"	-22.6"
TRAJ: 300 yd. zero	-1.5"	12.9"	23.7"	29.2"	28.0"	18.9"	0.0"
VELOCITY (fps)	1800	1469	1210	1047	942	854	778
ENERGY (ft. lbs.)	288	192	130	97	79	65	54
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.5"	-10.9"	-26.5"	-50.5"	-84.9"
TRAJ: 100 yd. zero	-1.5"	1.3"	0.0"	-7.0"	-21.3"	-44.0"	-77.1"
TRAJ: 150 yd. zero	-1.5"	3.7"	4.7"	0.0"	-11.9"	-32.2"	-62.9"
TRAJ: 200 yd. zero	-1.5"	6.6"	10.7"	9.0"	0.0"	-17.3"	-45.0"
TRAJ: 250 yd. zero	-1.5"	10.1"	17.6"	19.4"	13.9"	0.0"	-24.2"
TRAJ: 300 yd. zero	-1.5"	14.2"	25.7"	31.5"	30.1"	20.2"	0.0"
VELOCITY (fps)	1700	1388	1157	1015	915	831	757
ENERGY (ft. lbs.)	257	171	119	92	74	61	51
TRAJ: 50 yd. zero	-1.5"	0.0"	-3.0"	-12.4"	-29.3"	-55.5"	-92.7"
TRAJ: 100 yd. zero	-1.5"	1.5"	0.0"	-7.8"	-23.1"	-47.7"	-83.4"
TRAJ: 150 yd. zero	-1.5"	4.2"	5.2"	0.0"	-12.7"	-34.7"	-67.7"
TRAJ: 200 yd. zero	-1.5"	7.3"	11.6"	9.6"	0.0"	-18.7"	-48.6"
TRAJ: 250 yd. zero	-1.5"	11.1"	19.1"	20.8"	15.0"	0.0"	-26.1"
TRAJ: 300 yd. zero	-1.5"	15.5"	27.8"	33.9"	32.4"	21.8"	0.0"
VELOCITY (fps)	1600	1308	1103	981	887	807	735
ENERGY (ft. lbs.)	227	152	108	85	70	58	48
TRAJ: 50 yd. zero	-1.5"	0.0"	-3.6"	-14.1"	-32.7"	-61.3"	-101.9"
TRAJ: 100 yd. zero	-1.5"	1.8"	0.0"	-8.6"	-25.5"	-52.3"	-91.1"
TRAJ: 150 yd. zero	-1.5"	4.7"	5.8"	0.0"	-13.9"	-37.8"	-73.7"
TRAJ: 200 yd. zero	-1.5"	8.2"	12.8"	10.5"	0.0"	-20.3"	-52.8"
TRAJ: 250 yd. zero	-1.5"	12.3"	20.9"	22.7"	16.3"	0.0"	-28.3"
TRAJ: 300 yd. zero	-1.5"	17.0"	30.4"	36.9"	35.2"	23.6"	0.0"
VELOCITY (fps)	1500	1232	1060	951	862	785	715
ENERGY (ft. lbs.)	200	135	100	80	66	55	45
TRAJ: 50 yd. zero	-1.5"	0.0"	-4.1"	-15.8"	-36.4"	-67.4"	-111.2"
TRAJ: 100 yd. zero	-1.5"	2.1"	0.0"	-9.5"	-28.0"	-56.9"	-98.6"
TRAJ: 150 yd. zero	-1.5"	5.3"	6.4"	0.0"	-15.2"	-40.9"	-79.5"
TRAJ: 200 yd. zero	-1.5"	9.1"	14.0"	11.4"	0.0"	-21.8"	-56.6"
TRAJ: 250 yd. zero	-1.5"	13.5"	22.8"	24.6"	17.5"	0.0"	-30.3"
TRAJ: 300 yd. zero	-1.5"	18.5"	32.9"	39.8"	37.8"	25.3"	0.0"

**22 CALIBER (.223" or .224" Dia.) 45 GRAIN HORNET**

SECTIONAL DENSITY: .128 BALLISTIC COEFFICIENT: .191

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3700	3414	3141	2880	2631	2397	2177
ENERGY (ft. lbs.)	1368	1165	986	829	692	574	474
TRAJ: 50 yd. zero	-1.5"	0.0"	.7"	.8"	-.6"	-3.1"	-7.1"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.5"	-2.1"	-4.9"	-9.3"
TRAJ: 150 yd. zero	-1.5"	-.1"	.4"	0.0"	-1.4"	-4.0"	-8.2"
TRAJ: 200 yd. zero	-1.5"	.2"	1.1"	1.1"	0.0"	-2.3"	-6.1"
TRAJ: 250 yd. zero	-1.5"	.6"	2.0"	2.5"	1.9"	0.0"	-3.3"
TRAJ: 300 yd. zero	-1.5"	1.2"	3.1"	4.1"	4.1"	2.8"	0.0"
VELOCITY (fps)	3600	3318	3049	2793	2549	2319	2105
ENERGY (ft. lbs.)	1295	1101	929	779	649	538	443
TRAJ: 50 yd. zero	-1.5"	0.0"	.7"	.4"	-.9"	-3.6"	-8.0"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.8"	-2.3"	-5.4"	-10.1"
TRAJ: 150 yd. zero	-1.5"	-.1"	.4"	0.0"	-1.5"	-4.4"	-8.9"
TRAJ: 200 yd. zero	-1.5"	.2"	1.2"	1.1"	0.0"	-2.4"	-6.6"
TRAJ: 250 yd. zero	-1.5"	.7"	2.2"	2.6"	2.0"	0.0"	-3.6"
TRAJ: 300 yd. zero	-1.5"	1.3"	3.4"	4.5"	4.4"	3.0"	0.0"
VELOCITY (fps)	3500	3223	2958	2706	2467	2243	2033
ENERGY (ft. lbs.)	1224	1038	875	732	608	503	413
TRAJ: 50 yd. zero	-1.5"	0.0"	.7"	.3"	-1.2"	-4.2"	-9.0"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.8"	-2.5"	-5.9"	-10.9"
TRAJ: 150 yd. zero	-1.5"	0.0"	.5"	0.0"	-1.6"	-4.7"	-9.6"
TRAJ: 200 yd. zero	-1.5"	.3"	1.3"	1.2"	0.0"	-2.6"	-7.1"
TRAJ: 250 yd. zero	-1.5"	.9"	2.4"	2.9"	2.2"	0.0"	-3.8"
TRAJ: 300 yd. zero	-1.5"	1.5"	3.7"	4.8"	4.7"	3.2"	0.0"
VELOCITY (fps)	3400	3127	2867	2619	2385	2167	1963
ENERGY (ft. lbs.)	1155	977	822	686	569	469	385
TRAJ: 50 yd. zero	-1.5"	0.0"	.6"	.1"	-1.6"	-5.0"	-10.1"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-.7"	-2.8"	-6.4"	-11.9"
TRAJ: 150 yd. zero	-1.5"	0.0"	.5"	0.0"	-1.8"	-5.1"	-10.3"
TRAJ: 200 yd. zero	-1.5"	.4"	1.4"	1.4"	0.0"	-2.9"	-7.6"
TRAJ: 250 yd. zero	-1.5"	1.0"	2.6"	3.1"	2.3"	0.0"	-4.1"
TRAJ: 300 yd. zero	-1.5"	1.7"	4.0"	5.2"	5.1"	3.5"	0.0"
VELOCITY (fps)	3300	3032	2776	2533	2305	2091	1892
ENERGY (ft. lbs.)	1088	919	770	641	531	437	358
TRAJ: 50 yd. zero	-1.5"	0.0"	.5"	0.0"	-2.0"	-5.7"	-11.4"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-.8"	-3.1"	-7.0"	-12.9"
TRAJ: 150 yd. zero	-1.5"	0.0"	.6"	0.0"	-1.9"	-5.5"	-11.2"
TRAJ: 200 yd. zero	-1.5"	.5"	1.6"	1.5"	0.0"	-3.1"	-8.2"
TRAJ: 250 yd. zero	-1.5"	1.2"	2.8"	3.4"	2.5"	0.0"	-4.5"
TRAJ: 300 yd. zero	-1.5"	1.9"	4.3"	5.6"	5.5"	3.8"	0.0"
VELOCITY (fps)	3200	2936	2685	2447	2225	2017	1823
ENERGY (ft. lbs.)	1023	862	721	599	495	406	332
TRAJ: 50 yd. zero	-1.5"	0.0"	.5"	-.3"	-2.5"	-6.5"	-12.7"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-.9"	-3.4"	-7.7"	-14.1"
TRAJ: 150 yd. zero	-1.5"	.1"	.7"	0.0"	-2.1"	-6.0"	-12.1"
TRAJ: 200 yd. zero	-1.5"	.6"	1.7"	1.6"	0.0"	-3.3"	-8.9"
TRAJ: 250 yd. zero	-1.5"	1.3"	3.1"	3.6"	2.7"	0.0"	-4.8"
TRAJ: 300 yd. zero	-1.5"	2.1"	4.7"	6.1"	6.0"	4.1"	0.0"
VELOCITY (fps)	3100	2841	2594	2362	2145	1942	1754
ENERGY (ft. lbs.)	960	807	673	558	460	377	307
TRAJ: 50 yd. zero	-1.5"	0.0"	.4"	-.5"	-3.0"	-7.5"	-14.2"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.1"	-3.8"	-8.4"	-15.4"
TRAJ: 150 yd. zero	-1.5"	.2"	.8"	0.0"	-2.3"	-6.6"	-13.2"
TRAJ: 200 yd. zero	-1.5"	.8"	1.9"	1.8"	0.0"	-3.6"	-9.6"
TRAJ: 250 yd. zero	-1.5"	1.5"	3.4"	4.0"	2.9"	0.0"	-5.2"
TRAJ: 300 yd. zero	-1.5"	2.4"	5.2"	6.6"	6.5"	4.4"	0.0"
VELOCITY (fps)	3000	2746	2504	2278	2066	1869	1687
ENERGY (ft. lbs.)	900	754	627	519	427	349	284
TRAJ: 50 yd. zero	-1.5"	0.0"	.3"	-.8"	-3.6"	-8.5"	-16.0"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.2"	-4.2"	-9.3"	-16.9"
TRAJ: 150 yd. zero	-1.5"	.3"	.8"	0.0"	-2.5"	-7.2"	-14.4"
TRAJ: 200 yd. zero	-1.5"	.9"	2.1"	1.9"	0.0"	-4.0"	-10.5"
TRAJ: 250 yd. zero	-1.5"	1.7"	3.7"	4.3"	3.2"	0.0"	-5.7"
TRAJ: 300 yd. zero	-1.5"	2.7"	5.7"	7.2"	7.0"	4.8"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2900	2651	2415	2194	1988	1796	1621
ENERGY (ft. lbs.)	841	702	583	481	395	322	263
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.1"	-4.2"	-9.7"	-18.0"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.4"	-4.7"	-10.2"	-18.6"
TRAJ: 150 yd. zero	-1.5"	.4"	1.0"	0.0"	-2.8"	-7.8"	-15.8"
TRAJ: 200 yd. zero	-1.5"	1.1"	2.4"	2.1"	0.0"	-4.3"	-11.5"
TRAJ: 250 yd. zero	-1.5"	1.9"	4.1"	4.7"	3.5"	0.0"	-6.3"
TRAJ: 300 yd. zero	-1.5"	3.0"	6.2"	7.9"	7.7"	5.3"	0.0"
VELOCITY (fps)	2800	2556	2326	2111	1911	1725	1556
ENERGY (ft. lbs.)	784	653	541	445	365	297	242
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.3"	-4.8"	-10.8"	-19.7"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.5"	-5.1"	-11.2"	-20.1"
TRAJ: 150 yd. zero	-1.5"	.4"	1.0"	0.0"	-3.1"	-8.6"	-17.1"
TRAJ: 200 yd. zero	-1.5"	1.2"	2.6"	2.3"	0.0"	-4.7"	-12.4"
TRAJ: 250 yd. zero	-1.5"	2.2"	4.5"	5.2"	3.8"	0.0"	-6.7"
TRAJ: 300 yd. zero	-1.5"	3.3"	6.7"	8.6"	8.3"	5.6"	0.0"
VELOCITY (fps)	2700	2461	2238	2029	1834	1655	1483
ENERGY (ft. lbs.)	729	605	500	411	336	274	220
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-1.6"	-5.5"	-11.9"	-21.6"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.7"	-5.5"	-12.0"	-21.7"
TRAJ: 150 yd. zero	-1.5"	.6"	1.2"	0.0"	-3.2"	-9.1"	-18.2"
TRAJ: 200 yd. zero	-1.5"	1.4"	2.8"	2.5"	0.0"	-5.0"	-13.3"
TRAJ: 250 yd. zero	-1.5"	2.4"	4.8"	5.5"	4.1"	0.0"	-7.2"
TRAJ: 300 yd. zero	-1.5"	3.6"	7.3"	9.1"	8.9"	6.1"	0.0"
VELOCITY (fps)	2600	2367	2150	1947	1758	1586	1422
ENERGY (ft. lbs.)	676	560	462	379	309	252	202
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-2.0"	-6.4"	-13.7"	-24.3"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.9"	-6.2"	-13.4"	-24.0"
TRAJ: 150 yd. zero	-1.5"	.7"	1.3"	0.0"	-3.6"	-10.2"	-20.1"
TRAJ: 200 yd. zero	-1.5"	1.6"	3.1"	2.7"	0.0"	-5.6"	-14.7"
TRAJ: 250 yd. zero	-1.5"	2.7"	5.4"	6.1"	4.5"	0.0"	-7.9"
TRAJ: 300 yd. zero	-1.5"	4.1"	8.0"	10.1"	9.8"	6.6"	0.0"
VELOCITY (fps)	2500	2274	2063	1865	1683	1509	1353
ENERGY (ft. lbs.)	625	517	425	348	283	228	183
TRAJ: 50 yd. zero	-1.5"	0.0"	-.2"	-2.5"	-7.4"	-15.4"	-27.3"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.2"	-7.0"	-14.8"	-26.5"
TRAJ: 150 yd. zero	-1.5"	.9"	1.5"	0.0"	-4.0"	-11.1"	-22.1"
TRAJ: 200 yd. zero	-1.5"	1.9"	3.5"	3.0"	0.0"	-6.0"	-16.0"
TRAJ: 250 yd. zero	-1.5"	3.1"	5.9"	6.7"	4.9"	0.0"	-8.7"
TRAJ: 300 yd. zero	-1.5"	4.6"	8.9"	11.1"	10.7"	7.3"	0.0"
VELOCITY (fps)	2400	2180	1975	1784	1610	1443	1295
ENERGY (ft. lbs.)	576	475	390	318	259	208	168
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.1"	-8.5"	-17.3"	-30.5"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.5"	-7.7"	-16.3"	-29.3"
TRAJ: 150 yd. zero	-1.5"	1.0"	1.7"	0.0"	-4.3"	-12.1"	-24.3"
TRAJ: 200 yd. zero	-1.5"	2.1"	3.9"	3.3"	0.0"	-6.6"	-17.7"
TRAJ: 250 yd. zero	-1.5"	3.5"	6.5"	7.3"	5.3"	0.0"	-9.7"
TRAJ: 300 yd. zero	-1.5"	5.1"	9.8"	12.2"	11.8"	8.1"	0.0"
VELOCITY (fps)	2300	2087	1888	1704	1538	1378	1241
ENERGY (ft. lbs.)	529	435	356	290	236	190	154
TRAJ: 50 yd. zero	-1.5"	0.0"	-.5"	-3.5"	-9.7"	-19.4"	-33.8"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.7"	-8.6"	-18.1"	-32.2"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.8"	0.0"	-4.9"	-13.5"	-26.7"
TRAJ: 200 yd. zero	-1.5"	2.4"	4.3"	3.7"	0.0"	-7.3"	-19.2"
TRAJ: 250 yd. zero	-1.5"	3.9"	7.3"	8.1"	5.9"	0.0"	-10.4"
TRAJ: 300 yd. zero	-1.5"	5.6"	10.7"	13.4"	12.9"	8.7"	0.0"
VELOCITY (fps)	2200	1994	1801	1625	1457	1307	1185
ENERGY (ft. lbs.)	484	397	324	264	212	171	140
TRAJ: 50 yd. zero	-1.5"	0.0"	-.7"	-4.3"	-11.1"	-22.1"	-38.4"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.1"	-9.6"	-20.2"	-36.2"
TRAJ: 150 yd. zero	-1.5"	1.4"	2.1"	0.0"	-5.4"	-14.9"	-29.8"
TRAJ: 200 yd. zero	-1.5"	2.8"	4.8"	4.1"	0.0"	-8.1"	-21.7"
TRAJ: 250 yd. zero	-1.5"	4.4"	8.1"	9.0"	6.5"	0.0"	-11.9"
TRAJ: 300 yd. zero	-1.5"	6.4"	12.1"	14.9"	14.5"	9.9"	0.0"

**22 CALIBER (.224" Dia.) 50 GRAIN SX OR SPIRE POINT**

SECTIONAL DENSITY: .142 BALLISTIC COEFFICIENT: .220

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	4000	3489	3017	2582	2190	1842	1541
ENERGY (ft. lbs.)	1777	1352	1011	740	532	377	264
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.4"	-6.6"	-17.3"	-35.3"	-63.8"
TRAJ: 200 yd. zero	-1.5"	.7"	0.0"	-4.5"	-14.5"	-31.7"	-59.6"
TRAJ: 300 yd. zero	-1.5"	2.2"	3.0"	0.0"	-8.4"	-24.1"	-50.5"
TRAJ: 400 yd. zero	-1.5"	4.3"	7.3"	6.3"	0.0"	-13.6"	-37.8"
TRAJ: 500 yd. zero	-1.5"	7.1"	12.7"	14.5"	10.9"	0.0"	-21.5"
TRAJ: 600 yd. zero	-1.5"	10.6"	19.9"	25.3"	25.3"	17.9"	0.0"
VELOCITY (fps)	3900	3397	2931	2504	2120	1780	1479
ENERGY (ft. lbs.)	1689	1281	954	696	499	352	243
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.5"	-7.3"	-18.6"	-38.0"	-68.4"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.9"	-15.4"	-34.1"	-63.6"
TRAJ: 300 yd. zero	-1.5"	2.4"	3.3"	0.0"	-8.9"	-25.8"	-53.7"
TRAJ: 400 yd. zero	-1.5"	4.7"	7.7"	6.7"	0.0"	-14.7"	-40.3"
TRAJ: 500 yd. zero	-1.5"	7.6"	13.6"	15.5"	11.8"	0.0"	-22.6"
TRAJ: 600 yd. zero	-1.5"	11.4"	21.2"	26.9"	26.9"	18.9"	0.0"
VELOCITY (fps)	3800	3304	2846	2426	2051	1720	1429
ENERGY (ft. lbs.)	1604	1212	899	654	467	329	227
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.8"	-19.8"	-40.5"	-72.8"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.2"	-16.4"	-36.1"	-67.6"
TRAJ: 300 yd. zero	-1.5"	2.6"	3.5"	0.0"	-9.4"	-27.4"	-57.1"
TRAJ: 400 yd. zero	-1.5"	5.0"	8.2"	7.1"	0.0"	-15.6"	-43.0"
TRAJ: 500 yd. zero	-1.5"	8.1"	14.5"	16.5"	12.5"	0.0"	-24.2"
TRAJ: 600 yd. zero	-1.5"	12.1"	22.5"	28.6"	28.7"	20.2"	0.0"
VELOCITY (fps)	3700	3211	2761	2350	1983	1661	1380
ENERGY (ft. lbs.)	1520	1145	846	613	437	306	212
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.6"	-21.7"	-43.8"	-78.5"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.6"	-17.8"	-38.9"	-72.6"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-10.2"	-29.4"	-61.3"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.9"	7.7"	0.0"	-16.6"	-45.9"
TRAJ: 500 yd. zero	-1.5"	8.8"	15.6"	17.7"	13.3"	0.0"	-25.9"
TRAJ: 600 yd. zero	-1.5"	13.1"	24.2"	30.7"	30.6"	21.6"	0.0"
VELOCITY (fps)	3600	3119	2676	2273	1916	1603	1333
ENERGY (ft. lbs.)	1439	1080	795	574	408	285	197
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-9.2"	-23.2"	-46.8"	-84.0"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-6.0"	-18.9"	-41.5"	-77.6"
TRAJ: 300 yd. zero	-1.5"	3.1"	4.0"	0.0"	-10.8"	-31.4"	-65.5"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.5"	8.2"	0.0"	-17.8"	-49.2"
TRAJ: 500 yd. zero	-1.5"	9.4"	16.6"	18.9"	14.3"	0.0"	-27.8"
TRAJ: 600 yd. zero	-1.5"	14.0"	25.9"	32.8"	32.8"	23.2"	0.0"
VELOCITY (fps)	3500	3027	2591	2198	1849	1547	1288
ENERGY (ft. lbs.)	1360	1017	745	536	380	266	184
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-10.0"	-25.0"	-50.4"	-90.2"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.4"	-20.2"	-44.4"	-83.0"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.3"	0.0"	-11.5"	-33.6"	-70.0"
TRAJ: 400 yd. zero	-1.5"	6.3"	10.1"	8.7"	0.0"	-19.1"	-52.6"
TRAJ: 500 yd. zero	-1.5"	10.1"	17.8"	20.2"	15.3"	0.0"	-29.7"
TRAJ: 600 yd. zero	-1.5"	15.0"	27.7"	35.0"	35.1"	24.8"	0.0"
VELOCITY (fps)	3400	2934	2507	2123	1782	1481	1238
ENERGY (ft. lbs.)	1284	956	698	500	353	244	170
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.8"	-27.1"	-54.3"	-97.3"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.9"	-21.9"	-47.7"	-89.5"
TRAJ: 300 yd. zero	-1.5"	3.6"	4.6"	0.0"	-12.6"	-36.2"	-75.6"
TRAJ: 400 yd. zero	-1.5"	6.8"	11.0"	9.5"	0.0"	-20.3"	-56.6"
TRAJ: 500 yd. zero	-1.5"	10.9"	19.1"	21.7"	16.3"	0.0"	-32.1"
TRAJ: 600 yd. zero	-1.5"	16.2"	29.8"	37.8"	37.8"	26.8"	0.0"
VELOCITY (fps)	3300	2842	2423	2049	1717	1427	1199
ENERGY (ft. lbs.)	1209	897	652	466	328	226	160
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-11.7"	-29.2"	-58.5"	-104.7"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-7.4"	-23.4"	-51.3"	-96.1"
TRAJ: 300 yd. zero	-1.5"	3.9"	5.0"	0.0"	-13.5"	-38.9"	-81.2"
TRAJ: 400 yd. zero	-1.5"	7.3"	11.7"	10.2"	0.0"	-22.0"	-60.9"
TRAJ: 500 yd. zero	-1.5"	11.7"	20.6"	23.4"	17.6"	0.0"	-34.4"
TRAJ: 600 yd. zero	-1.5"	17.5"	32.1"	40.6"	40.6"	28.7"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2750	2340	1975	1654	1374	1163
ENERGY (ft. lbs.)	1137	840	608	433	304	210	150
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 13.0"	- 32.0"	- 63.5"	- 113.3"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 8.1"	- 25.5"	- 55.4"	- 103.5"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.5"	0.0"	- 14.6"	- 41.7"	- 87.2"
TRAJ: 400 yd. zero	- 1.5"	8.0"	12.8"	11.0"	0.0"	- 23.4"	- 65.2"
TRAJ: 500 yd. zero	- 1.5"	12.7"	22.2"	25.1"	18.8"	0.0"	- 37.0"
TRAJ: 600 yd. zero	- 1.5"	18.9"	34.5"	43.6"	43.5"	30.9"	0.0"
VELOCITY (fps)	3100	2658	2258	1902	1592	1324	1131
ENERGY (ft. lbs.)	1067	785	566	402	281	195	142
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 14.1"	- 34.7"	- 69.0"	- 122.0"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.8"	- 27.5"	- 60.1"	- 111.3"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.9"	0.0"	- 15.8"	- 45.4"	- 93.6"
TRAJ: 400 yd. zero	- 1.5"	8.7"	13.8"	11.9"	0.0"	- 25.6"	- 69.9"
TRAJ: 500 yd. zero	- 1.5"	13.8"	24.0"	27.2"	20.5"	0.0"	- 39.2"
TRAJ: 600 yd. zero	- 1.5"	20.3"	37.1"	46.8"	46.6"	32.7"	0.0"
VELOCITY (fps)	3000	2567	2176	1829	1531	1276	1097
ENERGY (ft. lbs.)	999	732	526	372	260	181	134
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 15.4"	- 37.3"	- 73.9"	- 130.6"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 9.5"	- 29.4"	- 64.1"	- 118.7"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.3"	0.0"	- 16.7"	- 48.2"	- 99.7"
TRAJ: 400 yd. zero	- 1.5"	9.3"	14.7"	12.6"	0.0"	- 27.2"	- 74.5"
TRAJ: 500 yd. zero	- 1.5"	14.8"	25.6"	29.0"	21.8"	0.0"	- 41.8"
TRAJ: 600 yd. zero	- 1.5"	21.8"	39.6"	49.9"	49.7"	34.9"	0.0"
VELOCITY (fps)	2900	2475	2095	1758	1461	1223	1066
ENERGY (ft. lbs.)	934	681	487	343	237	166	126
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 16.8"	- 40.5"	- 80.7"	- 141.9"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 10.2"	- 31.8"	- 69.8"	- 128.8"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.9"	0.0"	- 18.1"	- 52.7"	- 108.2"
TRAJ: 400 yd. zero	- 1.5"	10.1"	15.9"	13.6"	0.0"	- 30.0"	- 81.1"
TRAJ: 500 yd. zero	- 1.5"	16.2"	28.0"	31.6"	24.1"	0.0"	- 45.0"
TRAJ: 600 yd. zero	- 1.5"	23.7"	43.0"	54.1"	54.1"	37.5"	0.0"
VELOCITY (fps)	2800	2385	2015	1688	1403	1182	1041
ENERGY (ft. lbs.)	871	632	451	316	219	155	120
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 18.4"	- 44.4"	- 88.1"	- 154.2"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 11.2"	- 34.8"	- 76.0"	- 139.7"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.5"	0.0"	- 19.8"	- 57.3"	- 117.3"
TRAJ: 400 yd. zero	- 1.5"	11.1"	17.4"	14.9"	0.0"	- 32.5"	- 87.5"
TRAJ: 500 yd. zero	- 1.5"	17.6"	30.4"	34.4"	26.0"	0.0"	- 48.4"
TRAJ: 600 yd. zero	- 1.5"	25.7"	46.6"	58.7"	58.4"	40.4"	0.0"
VELOCITY (fps)	2700	2295	1935	1620	1346	1145	1017
ENERGY (ft. lbs.)	810	585	416	291	201	146	115
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.3"	- 20.3"	- 48.5"	- 95.8"	- 166.2"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 12.3"	- 37.9"	- 82.5"	- 150.3"
TRAJ: 300 yd. zero	- 1.5"	6.8"	8.2"	0.0"	- 21.5"	- 62.0"	- 125.6"
TRAJ: 400 yd. zero	- 1.5"	12.1"	19.0"	16.1"	0.0"	- 35.1"	- 93.4"
TRAJ: 500 yd. zero	- 1.5"	19.2"	33.0"	37.2"	28.1"	0.0"	- 51.2"
TRAJ: 600 yd. zero	- 1.5"	27.7"	50.1"	62.8"	62.3"	42.7"	0.0"
VELOCITY (fps)	2600	2206	1856	1553	1293	1107	992
ENERGY (ft. lbs.)	751	540	382	268	186	136	109
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 22.0"	- 52.6"	- 103.3"	- 178.7"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 13.2"	- 40.8"	- 88.6"	- 161.0"
TRAJ: 300 yd. zero	- 1.5"	7.4"	8.8"	0.0"	- 23.2"	- 66.5"	- 134.6"
TRAJ: 400 yd. zero	- 1.5"	13.2"	20.4"	17.4"	0.0"	- 37.5"	- 99.8"
TRAJ: 500 yd. zero	- 1.5"	20.7"	35.4"	39.9"	30.0"	0.0"	- 54.7"
TRAJ: 600 yd. zero	- 1.5"	29.8"	53.7"	67.3"	66.5"	45.6"	0.0"
VELOCITY (fps)	2500	2117	1777	1477	1235	1073	968
ENERGY (ft. lbs.)	694	498	351	242	169	128	104
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.3"	- 24.0"	- 57.6"	- 112.5"	- 194.2"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 14.5"	- 44.8"	- 96.5"	- 175.0"
TRAJ: 300 yd. zero	- 1.5"	8.0"	9.7"	0.0"	- 25.4"	- 72.4"	- 146.0"
TRAJ: 400 yd. zero	- 1.5"	14.4"	22.4"	19.1"	0.0"	- 40.5"	- 107.8"
TRAJ: 500 yd. zero	- 1.5"	22.5"	38.6"	43.5"	32.4"	0.0"	- 59.1"
TRAJ: 600 yd. zero	- 1.5"	32.4"	58.4"	73.0"	71.9"	49.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2028	1700	1412	1189	1045	947
ENERGY (ft. lbs.)	640	457	321	222	157	121	100
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.1"	-26.4"	-63.3"	-123.0"	-209.1"
TRAJ: 200 yd. zero	-1.5"	3.6"	0.0"	-15.7"	-49.0"	-105.1"	-187.7"
TRAJ: 300 yd. zero	-1.5"	8.8"	10.5"	0.0"	-28.0"	-78.9"	-156.2"
TRAJ: 400 yd. zero	-1.5"	15.8"	24.5"	21.0"	0.0"	-43.9"	-114.1"
TRAJ: 500 yd. zero	-1.5"	24.6"	42.1"	47.4"	35.1"	0.0"	-61.4"
TRAJ: 600 yd. zero	-1.5"	34.9"	62.6"	78.1"	76.1"	51.2"	0.0"
VELOCITY (fps)	2300	1939	1623	1349	1147	1018	927
ENERGY (ft. lbs.)	587	418	293	202	146	115	95
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.0"	-29.5"	-69.8"	-134.4"	-227.7"
TRAJ: 200 yd. zero	-1.5"	4.0"	0.0"	-17.3"	-53.6"	-114.2"	-203.4"
TRAJ: 300 yd. zero	-1.5"	9.8"	11.6"	0.0"	-30.4"	-85.2"	-168.6"
TRAJ: 400 yd. zero	-1.5"	17.5"	26.8"	22.9"	0.0"	-47.1"	-122.9"
TRAJ: 500 yd. zero	-1.5"	26.9"	45.7"	51.2"	37.7"	0.0"	-66.3"
TRAJ: 600 yd. zero	-1.5"	38.0"	67.8"	84.3"	82.0"	55.3"	0.0"
VELOCITY (fps)	2200	1851	1548	1289	1105	990	901
ENERGY (ft. lbs.)	537	380	266	185	136	109	90
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.9"	-32.6"	-76.8"	-146.9"	-246.3"
TRAJ: 200 yd. zero	-1.5"	4.5"	0.0"	-19.2"	-58.8"	-124.5"	-219.5"
TRAJ: 300 yd. zero	-1.5"	10.9"	12.8"	0.0"	-33.2"	-92.5"	-181.1"
TRAJ: 400 yd. zero	-1.5"	19.2"	29.4"	25.0"	0.0"	-50.9"	-131.1"
TRAJ: 500 yd. zero	-1.5"	29.4"	49.8"	55.6"	40.8"	0.0"	-69.9"
TRAJ: 600 yd. zero	-1.5"	41.1"	73.2"	90.6"	87.4"	58.3"	0.0"
VELOCITY (fps)	2100	1762	1465	1225	1067	964	879
ENERGY (ft. lbs.)	490	345	238	167	126	103	86
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.0"	-36.3"	-84.7"	-160.0"	-267.3"
TRAJ: 200 yd. zero	-1.5"	5.0"	0.0"	-21.3"	-64.7"	-135.0"	-237.2"
TRAJ: 300 yd. zero	-1.5"	12.1"	14.3"	0.0"	-36.2"	-99.4"	-194.5"
TRAJ: 400 yd. zero	-1.5"	21.2"	32.4"	27.2"	0.0"	-54.0"	-140.1"
TRAJ: 500 yd. zero	-1.5"	32.0"	54.0"	59.7"	43.3"	0.0"	-75.2"
TRAJ: 600 yd. zero	-1.5"	44.6"	79.1"	97.3"	93.4"	62.7"	0.0"

## 22 CALIBER (.224" Dia.) 52 GRAIN BOAT TAIL HOLLOW POINT MATCH

SECTIONAL DENSITY: .148 BALLISTIC COEFFICIENT: .227

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3319	2873	2463	2095	1768	1477
ENERGY (ft. lbs.)	1668	1272	953	701	507	361	252
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.7"	-19.5"	-39.5"	-70.6"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.1"	-16.1"	-35.1"	-65.4"
TRAJ: 300 yd. zero	-1.5"	2.6"	3.4"	0.0"	-9.2"	-26.6"	-55.1"
TRAJ: 400 yd. zero	-1.5"	4.9"	8.1"	7.0"	0.0"	-15.0"	-41.2"
TRAJ: 500 yd. zero	-1.5"	7.9"	14.1"	16.0"	12.0"	0.0"	-23.2"
TRAJ: 600 yd. zero	-1.5"	11.8"	21.8"	27.6"	27.5"	19.3"	0.0"
VELOCITY (fps)	3700	3226	2787	2386	2026	1707	1427
ENERGY (ft. lbs.)	1581	1202	897	657	474	337	235
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-8.3"	-21.0"	-42.2"	-75.5"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.5"	-17.2"	-37.5"	-69.8"
TRAJ: 300 yd. zero	-1.5"	2.8"	3.7"	0.0"	-9.8"	-28.2"	-58.7"
TRAJ: 400 yd. zero	-1.5"	5.3"	8.6"	7.4"	0.0"	-15.9"	-43.9"
TRAJ: 500 yd. zero	-1.5"	8.5"	15.0"	17.0"	12.8"	0.0"	-24.7"
TRAJ: 600 yd. zero	-1.5"	12.6"	23.3"	29.4"	29.3"	20.7"	0.0"
VELOCITY (fps)	3600	3133	2702	2309	1957	1648	1377
ENERGY (ft. lbs.)	1497	1134	843	616	443	314	219
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-9.1"	-22.8"	-45.5"	-81.1"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.9"	-18.5"	-40.2"	-74.8"
TRAJ: 300 yd. zero	-1.5"	3.0"	3.9"	0.0"	-10.6"	-30.3"	-62.9"
TRAJ: 400 yd. zero	-1.5"	5.7"	9.3"	8.0"	0.0"	-17.0"	-46.9"
TRAJ: 500 yd. zero	-1.5"	9.1"	16.1"	18.2"	13.6"	0.0"	-26.5"
TRAJ: 600 yd. zero	-1.5"	13.5"	24.9"	31.5"	31.3"	22.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3041	2617	2232	1889	1590	1329
ENERGY (ft. lbs.)	1415	1068	791	576	412	292	204
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.7"	- 24.4"	- 48.7"	- 86.9"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 6.3"	- 19.7"	- 42.9"	- 79.9"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.2"	0.0"	- 11.3"	- 32.4"	- 67.3"
TRAJ: 400 yd. zero	- 1.5"	6.1"	9.9"	8.5"	0.0"	- 18.2"	- 50.3"
TRAJ: 500 yd. zero	- 1.5"	9.7"	17.2"	19.4"	14.6"	0.0"	- 28.4"
TRAJ: 600 yd. zero	- 1.5"	14.5"	26.7"	33.7"	33.6"	23.7"	0.0"
VELOCITY (fps)	3400	2948	2532	2157	1822	1533	1284
ENERGY (ft. lbs.)	1335	1004	740	537	383	271	190
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.8"	- 26.5"	- 52.7"	- 93.7"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.9"	- 21.3"	- 46.2"	- 85.9"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.6"	0.0"	- 12.0"	- 34.7"	- 72.1"
TRAJ: 400 yd. zero	- 1.5"	6.6"	10.7"	9.1"	0.0"	- 19.6"	- 53.9"
TRAJ: 500 yd. zero	- 1.5"	10.6"	18.5"	20.8"	15.7"	0.0"	- 30.4"
TRAJ: 600 yd. zero	- 1.5"	15.6"	28.6"	36.1"	36.0"	25.4"	0.0"
VELOCITY (fps)	3300	2856	2448	2081	1756	1467	1233
ENERGY (ft. lbs.)	1258	942	692	500	356	249	176
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.6"	- 28.8"	- 57.1"	- 101.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 7.4"	- 23.1"	- 50.0"	- 93.0"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.9"	0.0"	- 13.2"	- 37.7"	- 78.2"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.6"	9.9"	0.0"	- 21.1"	- 58.3"
TRAJ: 500 yd. zero	- 1.5"	11.4"	20.0"	22.6"	16.9"	0.0"	- 32.9"
TRAJ: 600 yd. zero	- 1.5"	16.9"	31.0"	39.1"	38.9"	27.5"	0.0"
VELOCITY (fps)	3200	2764	2364	2007	1691	1413	1194
ENERGY (ft. lbs.)	1183	882	646	465	330	230	165
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.6"	- 31.0"	- 61.7"	- 109.5"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.9"	- 24.8"	- 53.8"	- 100.1"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.3"	0.0"	- 14.2"	- 40.6"	- 84.2"
TRAJ: 400 yd. zero	- 1.5"	7.8"	12.4"	10.7"	0.0"	- 22.8"	- 62.9"
TRAJ: 500 yd. zero	- 1.5"	12.3"	21.6"	24.4"	18.3"	0.0"	- 35.5"
TRAJ: 600 yd. zero	- 1.5"	18.3"	33.4"	42.1"	42.0"	29.6"	0.0"
VELOCITY (fps)	3100	2671	2281	1933	1627	1359	1159
ENERGY (ft. lbs.)	1110	824	601	432	306	213	155
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.8"	- 33.8"	- 67.0"	- 118.6"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.5"	- 26.7"	- 58.2"	- 108.0"
TRAJ: 300 yd. zero	- 1.5"	4.6"	5.7"	0.0"	- 15.3"	- 43.9"	- 90.9"
TRAJ: 400 yd. zero	- 1.5"	8.5"	13.4"	11.5"	0.0"	- 24.7"	- 67.9"
TRAJ: 500 yd. zero	- 1.5"	13.4"	23.3"	26.4"	19.8"	0.0"	- 38.2"
TRAJ: 600 yd. zero	- 1.5"	19.8"	36.0"	45.5"	45.3"	31.9"	0.0"
VELOCITY (fps)	3000	2579	2199	1860	1565	1309	1126
ENERGY (ft. lbs.)	1039	768	558	399	283	198	147
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 15.0"	- 36.7"	- 72.5"	- 128.4"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 9.2"	- 28.9"	- 62.8"	- 116.8"
TRAJ: 300 yd. zero	- 1.5"	5.0"	6.1"	0.0"	- 16.6"	- 47.4"	- 98.3"
TRAJ: 400 yd. zero	- 1.5"	9.2"	14.5"	12.5"	0.0"	- 26.6"	- 73.3"
TRAJ: 500 yd. zero	- 1.5"	14.5"	25.1"	28.5"	21.3"	0.0"	- 41.3"
TRAJ: 600 yd. zero	- 1.5"	21.4"	38.9"	49.2"	48.9"	34.5"	0.0"
VELOCITY (fps)	2900	2488	2117	1787	1494	1253	1088
ENERGY (ft. lbs.)	971	715	518	369	258	181	137
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 16.3"	- 39.5"	- 78.6"	- 137.9"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.9"	- 30.9"	- 67.8"	- 125.0"
TRAJ: 300 yd. zero	- 1.5"	5.5"	6.6"	0.0"	- 17.6"	- 51.2"	- 105.1"
TRAJ: 400 yd. zero	- 1.5"	9.9"	15.5"	13.3"	0.0"	- 29.1"	- 78.5"
TRAJ: 500 yd. zero	- 1.5"	15.7"	27.1"	30.8"	23.3"	0.0"	- 43.5"
TRAJ: 600 yd. zero	- 1.5"	23.0"	41.7"	52.6"	52.4"	36.3"	0.0"
VELOCITY (fps)	2800	2397	2036	1716	1434	1209	1061
ENERGY (ft. lbs.)	905	664	479	340	238	169	130
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 18.1"	- 43.3"	- 85.8"	- 149.5"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 11.0"	- 33.8"	- 73.9"	- 135.3"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.4"	0.0"	- 19.1"	- 55.5"	- 113.1"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.9"	14.3"	0.0"	- 31.6"	- 84.5"
TRAJ: 500 yd. zero	- 1.5"	17.2"	29.6"	33.3"	25.3"	0.0"	- 46.5"
TRAJ: 600 yd. zero	- 1.5"	24.9"	45.1"	56.6"	56.3"	38.8"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2307	1956	1647	1376	1169	1035
ENERGY (ft. lbs.)	842	615	442	313	219	158	124
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.6"	- 47.1"	- 92.6"	- 161.5"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.8"	- 36.6"	- 79.6"	- 145.8"
TRAJ: 300 yd. zero	- 1.5"	6.6"	7.9"	0.0"	- 20.9"	- 59.9"	- 122.2"
TRAJ: 400 yd. zero	- 1.5"	11.8"	18.3"	15.7"	0.0"	- 33.7"	- 90.8"
TRAJ: 500 yd. zero	- 1.5"	18.5"	31.8"	36.0"	27.0"	0.0"	- 50.2"
TRAJ: 600 yd. zero	- 1.5"	26.9"	48.6"	61.1"	60.5"	41.9"	0.0"
VELOCITY (fps)	2600	2217	1876	1579	1320	1133	1012
ENERGY (ft. lbs.)	781	568	407	288	201	148	118
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.7"	- 21.6"	- 51.7"	- 101.0"	- 174.7"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.9"	- 40.1"	- 86.6"	- 157.3"
TRAJ: 300 yd. zero	- 1.5"	7.2"	8.7"	0.0"	- 22.7"	- 64.9"	- 131.3"
TRAJ: 400 yd. zero	- 1.5"	12.9"	20.1"	17.1"	0.0"	- 36.4"	- 97.1"
TRAJ: 500 yd. zero	- 1.5"	20.2"	34.6"	39.0"	29.2"	0.0"	- 53.4"
TRAJ: 600 yd. zero	- 1.5"	29.1"	52.5"	65.7"	64.8"	44.5"	0.0"
VELOCITY (fps)	2500	2128	1797	1502	1260	1091	983
ENERGY (ft. lbs.)	722	523	373	260	183	138	112
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.4"	- 23.8"	- 56.7"	- 110.3"	- 189.4"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 14.2"	- 43.8"	- 94.2"	- 170.1"
TRAJ: 300 yd. zero	- 1.5"	8.0"	9.5"	0.0"	- 24.9"	- 70.5"	- 141.7"
TRAJ: 400 yd. zero	- 1.5"	14.2"	21.9"	18.7"	0.0"	- 39.4"	- 104.3"
TRAJ: 500 yd. zero	- 1.5"	22.1"	37.7"	42.3"	31.5"	0.0"	- 57.0"
TRAJ: 600 yd. zero	- 1.5"	31.6"	56.7"	70.9"	69.6"	47.5"	0.0"
VELOCITY (fps)	2400	2039	1718	1436	1210	1061	962
ENERGY (ft. lbs.)	665	480	341	238	169	130	107
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.1"	- 26.4"	- 62.7"	- 121.2"	- 206.1"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 15.6"	- 48.3"	- 103.3"	- 184.5"
TRAJ: 300 yd. zero	- 1.5"	8.8"	10.4"	0.0"	- 27.5"	- 77.2"	- 153.3"
TRAJ: 400 yd. zero	- 1.5"	15.7"	24.2"	20.6"	0.0"	- 42.8"	- 112.0"
TRAJ: 500 yd. zero	- 1.5"	24.3"	41.3"	46.3"	34.3"	0.0"	- 60.6"
TRAJ: 600 yd. zero	- 1.5"	34.4"	61.5"	76.7"	74.7"	50.5"	0.0"
VELOCITY (fps)	2300	1950	1641	1371	1166	1034	941
ENERGY (ft. lbs.)	611	439	311	217	157	123	102
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.8"	- 28.7"	- 68.5"	- 131.7"	- 223.3"
TRAJ: 200 yd. zero	- 1.5"	3.9"	0.0"	- 16.9"	- 52.8"	- 112.1"	- 199.7"
TRAJ: 300 yd. zero	- 1.5"	9.6"	11.3"	0.0"	- 30.2"	- 83.8"	- 165.8"
TRAJ: 400 yd. zero	- 1.5"	17.1"	26.4"	22.7"	0.0"	- 46.0"	- 120.5"
TRAJ: 500 yd. zero	- 1.5"	26.4"	44.8"	50.3"	36.9"	0.0"	- 65.1"
TRAJ: 600 yd. zero	- 1.5"	37.2"	66.6"	82.9"	80.3"	54.3"	0.0"
VELOCITY (fps)	2200	1861	1565	1310	1127	1007	920
ENERGY (ft. lbs.)	559	400	283	198	147	117	98
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.9"	- 32.3"	- 76.1"	- 144.3"	- 241.1"
TRAJ: 200 yd. zero	- 1.5"	4.5"	0.0"	- 18.9"	- 58.2"	- 122.0"	- 214.3"
TRAJ: 300 yd. zero	- 1.5"	10.8"	12.6"	0.0"	- 32.9"	- 90.5"	- 176.5"
TRAJ: 400 yd. zero	- 1.5"	19.0"	29.1"	24.7"	0.0"	- 49.2"	- 127.0"
TRAJ: 500 yd. zero	- 1.5"	28.9"	48.8"	54.3"	39.4"	0.0"	- 67.9"
TRAJ: 600 yd. zero	- 1.5"	40.2"	71.4"	88.3"	84.7"	56.6"	0.0"
VELOCITY (fps)	2100	1772	1481	1244	1082	976	891
ENERGY (ft. lbs.)	509	363	253	179	135	110	92
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.8"	- 35.6"	- 83.0"	- 157.3"	- 261.7"
TRAJ: 200 yd. zero	- 1.5"	4.9"	0.0"	- 20.8"	- 63.3"	- 132.7"	- 232.2"
TRAJ: 300 yd. zero	- 1.5"	11.9"	13.9"	0.0"	- 35.5"	- 97.9"	- 190.4"
TRAJ: 400 yd. zero	- 1.5"	20.8"	31.7"	26.6"	0.0"	- 53.5"	- 137.2"
TRAJ: 500 yd. zero	- 1.5"	31.5"	53.1"	58.8"	42.9"	0.0"	- 72.9"
TRAJ: 600 yd. zero	- 1.5"	43.6"	77.4"	95.2"	91.5"	60.8"	0.0"



## 22 CALIBER (.224" Dia.) 53 GRAIN HOLLOW POINT MATCH

SECTIONAL DENSITY: .151 BALLISTIC COEFFICIENT: .243

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3349	2930	2541	2188	1871	1592
ENERGY (ft. lbs.)	1700	1320	1010	760	564	412	298
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.6"	-7.3"	-18.6"	-37.3"	-65.9"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.9"	-15.3"	-33.2"	-61.0"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.3"	0.0"	-8.7"	-25.0"	-51.1"
TRAJ: 400 yd. zero	-1.5"	4.7"	7.7"	6.6"	0.0"	-14.0"	-37.9"
TRAJ: 500 yd. zero	-1.5"	7.5"	13.3"	15.0"	11.2"	0.0"	-21.1"
TRAJ: 600 yd. zero	-1.5"	11.0"	20.4"	25.6"	25.3"	17.6"	0.0"
VELOCITY (fps)	3700	3256	2843	2462	2117	1807	1538
ENERGY (ft. lbs.)	1612	1248	952	713	527	385	278
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-8.1"	-20.1"	-39.9"	-70.4"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.3"	-16.4"	-35.3"	-64.8"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.6"	0.0"	-9.3"	-26.4"	-54.2"
TRAJ: 400 yd. zero	-1.5"	5.0"	8.2"	7.0"	0.0"	-14.8"	-40.2"
TRAJ: 500 yd. zero	-1.5"	8.0"	14.1"	15.9"	11.9"	0.0"	-22.4"
TRAJ: 600 yd. zero	-1.5"	11.7"	21.6"	27.1"	26.8"	18.7"	0.0"
VELOCITY (fps)	3600	3163	2757	2383	2046	1745	1474
ENERGY (ft. lbs.)	1526	1178	895	668	493	358	256
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.7"	-21.7"	-43.2"	-76.3"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.6"	-17.6"	-38.1"	-70.1"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-10.0"	-28.6"	-58.8"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.8"	7.6"	0.0"	-16.0"	-43.6"
TRAJ: 500 yd. zero	-1.5"	8.7"	15.3"	17.2"	12.9"	0.0"	-24.3"
TRAJ: 600 yd. zero	-1.5"	12.7"	23.4"	29.4"	29.1"	20.3"	0.0"
VELOCITY (fps)	3500	3070	2671	2305	1976	1683	1422
ENERGY (ft. lbs.)	1442	1109	839	625	460	333	238
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-9.5"	-23.4"	-46.3"	-81.6"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-6.1"	-18.9"	-40.7"	-74.9"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.1"	0.0"	-10.6"	-30.4"	-62.6"
TRAJ: 400 yd. zero	-1.5"	5.9"	9.5"	8.0"	0.0"	-17.1"	-46.5"
TRAJ: 500 yd. zero	-1.5"	9.3"	16.3"	18.3"	13.7"	0.0"	-26.0"
TRAJ: 600 yd. zero	-1.5"	13.6"	25.0"	31.3"	31.0"	21.7"	0.0"
VELOCITY (fps)	3400	2977	2585	2227	1906	1623	1371
ENERGY (ft. lbs.)	1361	1043	786	584	428	310	221
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.5"	-10.3"	-25.4"	-50.0"	-87.9"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.5"	-20.4"	-43.7"	-80.3"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.4"	0.0"	-11.6"	-32.8"	-67.2"
TRAJ: 400 yd. zero	-1.5"	6.4"	10.2"	8.7"	0.0"	-18.2"	-49.7"
TRAJ: 500 yd. zero	-1.5"	10.4"	17.5"	19.7"	14.6"	0.0"	-27.8"
TRAJ: 600 yd. zero	-1.5"	14.7"	26.8"	33.6"	33.2"	23.2"	0.0"
VELOCITY (fps)	3300	2884	2499	2150	1837	1563	1322
ENERGY (ft. lbs.)	1282	979	735	544	397	288	206
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-11.1"	-27.2"	-53.6"	-94.2"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-7.0"	-21.7"	-46.7"	-86.0"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.7"	0.0"	-12.3"	-35.0"	-72.0"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.9"	9.3"	0.0"	-19.5"	-53.4"
TRAJ: 500 yd. zero	-1.5"	10.7"	18.7"	21.0"	15.7"	0.0"	-29.9"
TRAJ: 600 yd. zero	-1.5"	15.7"	28.7"	36.0"	35.6"	25.0"	0.0"
VELOCITY (fps)	3200	2791	2414	2074	1769	1496	1268
ENERGY (ft. lbs.)	1205	917	686	506	369	263	189
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-12.3"	-29.6"	-58.1"	-102.0"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.7"	-23.4"	-50.4"	-92.7"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.1"	0.0"	-13.1"	-37.6"	-77.3"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.7"	9.9"	0.0"	-21.1"	-57.5"
TRAJ: 500 yd. zero	-1.5"	11.6"	20.2"	22.6"	16.9"	0.0"	-32.1"
TRAJ: 600 yd. zero	-1.5"	17.0"	30.9"	38.7"	38.4"	26.8"	0.0"
VELOCITY (fps)	3100	2698	2330	1999	1703	1439	1225
ENERGY (ft. lbs.)	1139	857	639	470	341	244	177
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-13.3"	-32.2"	-63.2"	-110.6"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-8.2"	-25.5"	-54.7"	-100.5"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.5"	0.0"	-14.5"	-40.9"	-83.9"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.8"	10.9"	0.0"	-22.8"	-62.1"
TRAJ: 500 yd. zero	-1.5"	12.6"	21.9"	24.6"	18.3"	0.0"	-34.7"
TRAJ: 600 yd. zero	-1.5"	18.4"	33.5"	42.0"	41.5"	29.0"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2606	2247	1924	1637	1384	1185
ENERGY (ft. lbs.)	1059	799	594	436	316	225	165
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-14.4"	-34.9"	-68.2"	-119.5"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.8"	-27.5"	-59.0"	-108.5"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.9"	0.0"	-15.6"	-44.2"	-90.7"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.8"	11.7"	0.0"	-24.6"	-67.2"
TRAJ: 500 yd. zero	-1.5"	13.7"	23.6"	26.5"	19.7"	0.0"	-37.6"
TRAJ: 600 yd. zero	-1.5"	19.9"	36.2"	45.4"	44.8"	31.4"	0.0"
VELOCITY (fps)	2900	2514	2164	1849	1574	1331	1149
ENERGY (ft. lbs.)	990	744	551	403	291	208	155
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.8"	-38.1"	-74.5"	-129.9"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.5"	-29.7"	-64.0"	-117.4"
TRAJ: 300 yd. zero	-1.5"	5.3"	6.4"	0.0"	-17.0"	-48.0"	-98.2"
TRAJ: 400 yd. zero	-1.5"	9.5"	14.9"	12.8"	0.0"	-26.8"	-72.7"
TRAJ: 500 yd. zero	-1.5"	14.9"	25.6"	28.8"	21.5"	0.0"	-40.5"
TRAJ: 600 yd. zero	-1.5"	21.7"	39.1"	49.1"	48.5"	33.8"	0.0"
VELOCITY (fps)	2800	2422	2081	1776	1501	1272	1107
ENERGY (ft. lbs.)	923	691	510	371	265	191	144
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-17.5"	-41.3"	-80.9"	-140.8"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-10.6"	-32.1"	-69.3"	-126.9"
TRAJ: 300 yd. zero	-1.5"	5.8"	7.1"	0.0"	-18.0"	-51.7"	-105.7"
TRAJ: 400 yd. zero	-1.5"	10.3"	16.1"	13.5"	0.0"	-29.1"	-78.7"
TRAJ: 500 yd. zero	-1.5"	16.2"	27.8"	31.0"	23.3"	0.0"	-43.7"
TRAJ: 600 yd. zero	-1.5"	23.5"	42.3"	52.9"	52.5"	36.4"	0.0"
VELOCITY (fps)	2700	2332	2000	1704	1440	1225	1078
ENERGY (ft. lbs.)	858	640	471	342	244	177	137
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.0"	-19.1"	-45.2"	-87.9"	-152.5"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-11.5"	-35.0"	-75.2"	-137.3"
TRAJ: 300 yd. zero	-1.5"	6.4"	7.7"	0.0"	-19.7"	-55.9"	-114.2"
TRAJ: 400 yd. zero	-1.5"	11.3"	17.5"	14.8"	0.0"	-31.3"	-84.7"
TRAJ: 500 yd. zero	-1.5"	17.6"	30.1"	33.6"	25.1"	0.0"	-47.0"
TRAJ: 600 yd. zero	-1.5"	25.4"	45.8"	57.1"	56.5"	39.2"	0.0"
VELOCITY (fps)	2600	2241	1919	1633	1380	1183	1051
ENERGY (ft. lbs.)	796	591	433	314	224	165	130
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-21.0"	-49.5"	-96.6"	-165.9"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.6"	-38.4"	-82.6"	-149.1"
TRAJ: 300 yd. zero	-1.5"	7.0"	8.4"	0.0"	-21.5"	-61.6"	-123.8"
TRAJ: 400 yd. zero	-1.5"	12.4"	19.2"	16.2"	0.0"	-34.6"	-91.5"
TRAJ: 500 yd. zero	-1.5"	19.3"	33.1"	37.0"	27.7"	0.0"	-49.9"
TRAJ: 600 yd. zero	-1.5"	27.7"	49.7"	61.9"	61.0"	41.6"	0.0"
VELOCITY (fps)	2500	2151	1838	1564	1323	1144	1025
ENERGY (ft. lbs.)	736	545	398	288	206	154	124
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.1"	-22.7"	-53.8"	-104.5"	-179.0"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-13.5"	-41.4"	-89.0"	-160.5"
TRAJ: 300 yd. zero	-1.5"	7.6"	9.0"	0.0"	-23.4"	-66.5"	-133.4"
TRAJ: 400 yd. zero	-1.5"	13.5"	20.7"	17.6"	0.0"	-37.2"	-98.3"
TRAJ: 500 yd. zero	-1.5"	20.9"	35.6"	39.9"	29.8"	0.0"	-53.6"
TRAJ: 600 yd. zero	-1.5"	29.8"	53.5"	66.7"	65.6"	44.7"	0.0"
VELOCITY (fps)	2400	2061	1758	1486	1261	1100	994
ENERGY (ft. lbs.)	678	500	364	260	187	142	116
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.8"	-25.0"	-59.4"	-114.5"	-195.1"
TRAJ: 200 yd. zero	-1.5"	3.4"	0.0"	-14.7"	-45.7"	-97.3"	-174.5"
TRAJ: 300 yd. zero	-1.5"	8.4"	9.9"	0.0"	-26.0"	-72.6"	-144.9"
TRAJ: 400 yd. zero	-1.5"	14.9"	22.9"	19.5"	0.0"	-40.1"	-105.9"
TRAJ: 500 yd. zero	-1.5"	22.9"	38.9"	43.6"	32.1"	0.0"	-57.7"
TRAJ: 600 yd. zero	-1.5"	32.5"	58.2"	72.5"	70.8"	48.1"	0.0"
VELOCITY (fps)	2300	1972	1679	1419	1210	1068	971
ENERGY (ft. lbs.)	623	458	332	237	172	134	111
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.6"	-28.0"	-65.6"	-125.6"	-212.6"
TRAJ: 200 yd. zero	-1.5"	3.8"	0.0"	-16.5"	-50.2"	-106.3"	-189.5"
TRAJ: 300 yd. zero	-1.5"	9.4"	11.0"	0.0"	-28.2"	-78.8"	-156.5"
TRAJ: 400 yd. zero	-1.5"	16.4"	25.1"	21.2"	0.0"	-43.5"	-114.1"
TRAJ: 500 yd. zero	-1.5"	25.1"	42.5"	47.3"	34.8"	0.0"	-61.9"
TRAJ: 600 yd. zero	-1.5"	35.4"	63.2"	78.3"	76.1"	51.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2200	1882	1601	1354	1165	1039	949
ENERGY (ft. lbs.)	570	417	302	216	160	127	106
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.7"	- 31.2"	- 72.7"	- 137.7"	- 231.0"
TRAJ: 200 yd. zero	- 1.5"	4.4"	0.0"	- 18.2"	- 55.2"	- 115.9"	- 204.9"
TRAJ: 300 yd. zero	- 1.5"	10.4"	12.1"	0.0"	- 31.0"	- 85.5"	- 168.5"
TRAJ: 400 yd. zero	- 1.5"	18.2"	27.6"	23.3"	0.0"	- 46.8"	- 122.0"
TRAJ: 500 yd. zero	- 1.5"	27.5"	46.4"	51.4"	37.5"	0.0"	- 65.8"
TRAJ: 600 yd. zero	- 1.5"	38.5"	68.3"	84.3"	81.4"	54.9"	0.0"
VELOCITY (fps)	2100	1792	1525	1291	1124	1011	927
ENERGY (ft. lbs.)	915	378	274	196	149	120	101
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.6"	- 34.5"	- 79.5"	- 150.3"	- 251.3"
TRAJ: 200 yd. zero	- 1.5"	4.8"	0.0"	- 20.0"	- 60.3"	- 126.2"	- 222.3"
TRAJ: 300 yd. zero	- 1.5"	11.5"	13.4"	0.0"	- 33.5"	- 92.7"	- 182.2"
TRAJ: 400 yd. zero	- 1.5"	19.9"	30.2"	25.2"	0.0"	- 50.8"	- 131.9"
TRAJ: 500 yd. zero	- 1.5"	30.1"	50.5"	55.7"	40.7"	0.0"	- 70.9"
TRAJ: 600 yd. zero	- 1.5"	41.9"	74.1"	91.1"	88.0"	59.1"	0.0"

**22 CALIBER (.224" Dia.) 55 GRAIN SX or SPIRE POINT**

SECTIONAL DENSITY: .157 BALLISTIC COEFFICIENT: .235

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3334	2902	2503	2143	1821	1541
ENERGY (ft. lbs.)	1764	1358	1029	766	561	405	290
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.6"	- 7.5"	- 19.2"	- 38.5"	- 68.7"
TRAJ: 200 yd. zero	- 1.5"	.8"	0.0"	- 5.0"	- 15.8"	- 34.3"	- 63.7"
TRAJ: 300 yd. zero	- 1.5"	2.5"	3.4"	0.0"	- 9.1"	- 25.9"	- 53.6"
TRAJ: 400 yd. zero	- 1.5"	4.8"	7.9"	6.8"	0.0"	- 14.5"	- 39.9"
TRAJ: 500 yd. zero	- 1.5"	7.7"	13.7"	15.6"	11.6"	0.0"	- 22.5"
TRAJ: 600 yd. zero	- 1.5"	11.5"	21.2"	26.8"	26.6"	18.8"	0.0"
VELOCITY (fps)	3700	3241	2816	2425	2073	1758	1478
ENERGY (ft. lbs.)	1672	1284	969	718	525	378	267
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.9"	- 8.2"	- 20.7"	- 41.2"	- 73.2"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.4"	- 16.9"	- 36.5"	- 67.5"
TRAJ: 300 yd. zero	- 1.5"	2.8"	3.6"	0.0"	- 9.6"	- 27.4"	- 56.6"
TRAJ: 400 yd. zero	- 1.5"	5.2"	8.5"	7.3"	0.0"	- 15.3"	- 42.1"
TRAJ: 500 yd. zero	- 1.5"	8.3"	14.6"	16.5"	12.3"	0.0"	- 23.7"
TRAJ: 600 yd. zero	- 1.5"	12.2"	22.5"	28.3"	28.1"	19.8"	0.0"
VELOCITY (fps)	3600	3149	2730	2347	2003	1697	1427
ENERGY (ft. lbs.)	1583	1211	911	673	490	352	249
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.0"	- 8.8"	- 22.1"	- 44.3"	- 78.5"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.7"	- 17.9"	- 39.1"	- 72.3"
TRAJ: 300 yd. zero	- 1.5"	3.0"	3.9"	0.0"	- 10.2"	- 29.5"	- 60.7"
TRAJ: 400 yd. zero	- 1.5"	5.5"	9.0"	7.7"	0.0"	- 16.7"	- 45.4"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.7"	17.7"	13.4"	0.0"	- 25.3"
TRAJ: 600 yd. zero	- 1.5"	13.1"	24.1"	30.4"	30.3"	21.1"	0.0"
VELOCITY (fps)	3500	3056	2644	2270	1934	1637	1376
ENERGY (ft. lbs.)	1496	1141	854	629	457	327	231
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.6"	- 24.0"	- 47.8"	- 84.5"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 6.1"	- 19.3"	- 42.0"	- 77.5"
TRAJ: 300 yd. zero	- 1.5"	3.2"	4.1"	0.0"	- 11.1"	- 31.7"	- 65.2"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.7"	8.4"	0.0"	- 17.8"	- 48.5"
TRAJ: 500 yd. zero	- 1.5"	9.6"	16.8"	19.1"	14.3"	0.0"	- 27.1"
TRAJ: 600 yd. zero	- 1.5"	14.1"	25.9"	32.6"	32.3"	22.6"	0.0"
VELOCITY (fps)	3400	2963	2559	2193	1865	1579	1328
ENERGY (ft. lbs.)	1412	1072	800	587	425	304	215
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 10.5"	- 25.8"	- 51.5"	- 90.9"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.7"	- 20.8"	- 45.1"	- 83.3"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.5"	0.0"	- 11.8"	- 33.9"	- 69.8"
TRAJ: 400 yd. zero	- 1.5"	6.5"	10.4"	8.9"	0.0"	- 19.1"	- 52.1"
TRAJ: 500 yd. zero	- 1.5"	10.3"	18.1"	20.4"	15.3"	0.0"	- 29.1"
TRAJ: 600 yd. zero	- 1.5"	15.2"	27.8"	34.9"	34.7"	24.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2870	2474	2117	1798	1511	1274
ENERGY (ft. lbs.)	1330	1006	748	547	395	279	198
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.4"	- 27.9"	- 55.2"	- 97.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 7.2"	- 22.2"	- 48.1"	- 89.0"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.8"	0.0"	- 12.6"	- 36.0"	- 74.6"
TRAJ: 400 yd. zero	- 1.5"	7.0"	11.1"	9.5"	0.0"	- 20.3"	- 55.6"
TRAJ: 500 yd. zero	- 1.5"	11.0"	19.3"	21.7"	16.2"	0.0"	- 31.2"
TRAJ: 600 yd. zero	- 1.5"	16.3"	29.7"	37.3"	37.1"	26.1"	0.0"
VELOCITY (fps)	3200	2778	2390	2041	1731	1455	1231
ENERGY (ft. lbs.)	1251	943	698	509	366	259	185
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.3"	- 30.3"	- 59.9"	- 105.6"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.7"	- 24.1"	- 52.1"	- 96.3"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.2"	0.0"	- 13.8"	- 39.2"	- 80.8"
TRAJ: 400 yd. zero	- 1.5"	7.6"	12.1"	10.4"	0.0"	- 21.9"	- 60.0"
TRAJ: 500 yd. zero	- 1.5"	12.0"	20.9"	23.6"	17.6"	0.0"	- 33.7"
TRAJ: 600 yd. zero	- 1.5"	17.6"	32.1"	40.4"	40.1"	28.1"	0.0"
VELOCITY (fps)	3100	2685	2306	1967	1666	1400	1191
ENERGY (ft. lbs.)	1174	881	650	472	339	239	173
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 13.4"	- 32.7"	- 64.6"	- 113.9"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 8.3"	- 25.9"	- 56.1"	- 103.7"
TRAJ: 300 yd. zero	- 1.5"	4.5"	5.5"	0.0"	- 14.8"	- 42.3"	- 87.1"
TRAJ: 400 yd. zero	- 1.5"	8.2"	13.0"	11.2"	0.0"	- 23.7"	- 64.8"
TRAJ: 500 yd. zero	- 1.5"	12.9"	22.5"	25.4"	19.0"	0.0"	- 36.3"
TRAJ: 600 yd. zero	- 1.5"	19.0"	34.6"	43.6"	43.2"	30.3"	0.0"
VELOCITY (fps)	3000	2593	2223	1893	1602	1347	1155
ENERGY (ft. lbs.)	1099	821	604	438	313	222	163
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.7"	- 14.7"	- 35.8"	- 70.5"	- 123.8"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 9.1"	- 28.3"	- 61.1"	- 112.5"
TRAJ: 300 yd. zero	- 1.5"	4.9"	6.1"	0.0"	- 16.1"	- 45.8"	- 94.2"
TRAJ: 400 yd. zero	- 1.5"	9.0"	14.2"	12.1"	0.0"	- 25.7"	- 70.0"
TRAJ: 500 yd. zero	- 1.5"	14.1"	24.5"	27.5"	20.6"	0.0"	- 39.1"
TRAJ: 600 yd. zero	- 1.5"	20.6"	37.5"	47.1"	46.7"	32.6"	0.0"
VELOCITY (fps)	2900	2501	2141	1819	1539	1296	1118
ENERGY (ft. lbs.)	1027	764	560	404	289	205	153
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 16.2"	- 38.7"	- 76.1"	- 133.1"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.8"	- 30.2"	- 65.5"	- 120.3"
TRAJ: 300 yd. zero	- 1.5"	5.4"	6.6"	0.0"	- 17.0"	- 49.0"	- 100.6"
TRAJ: 400 yd. zero	- 1.5"	9.7"	15.1"	12.8"	0.0"	- 27.7"	- 74.9"
TRAJ: 500 yd. zero	- 1.5"	15.2"	26.2"	29.4"	22.2"	0.0"	- 41.7"
TRAJ: 600 yd. zero	- 1.5"	22.2"	40.1"	50.3"	50.0"	34.8"	0.0"
VELOCITY (fps)	2800	2410	2060	1747	1468	1241	1084
ENERGY (ft. lbs.)	958	710	518	373	263	188	143
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 17.7"	- 42.2"	- 83.3"	- 145.4"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.7"	- 32.9"	- 71.6"	- 130.9"
TRAJ: 300 yd. zero	- 1.5"	5.9"	7.1"	0.0"	- 18.6"	- 53.7"	- 109.5"
TRAJ: 400 yd. zero	- 1.5"	10.6"	16.5"	14.0"	0.0"	- 30.4"	- 81.5"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.6"	32.3"	24.4"	0.0"	- 45.0"
TRAJ: 600 yd. zero	- 1.5"	24.2"	43.7"	54.8"	54.4"	37.6"	0.0"
VELOCITY (fps)	2700	2320	1979	1676	1409	1197	1057
ENERGY (ft. lbs.)	891	657	478	343	242	175	136
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 19.4"	- 46.0"	- 90.1"	- 156.5"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.6"	- 35.6"	- 77.2"	- 141.0"
TRAJ: 300 yd. zero	- 1.5"	6.5"	7.8"	0.0"	- 20.1"	- 57.7"	- 117.6"
TRAJ: 400 yd. zero	- 1.5"	11.5"	17.8"	15.1"	0.0"	- 32.5"	- 87.4"
TRAJ: 500 yd. zero	- 1.5"	18.0"	30.9"	34.7"	26.1"	0.0"	- 48.3"
TRAJ: 600 yd. zero	- 1.5"	26.1"	47.0"	58.8"	58.3"	40.3"	0.0"
VELOCITY (fps)	2600	2230	1898	1607	1351	1158	1031
ENERGY (ft. lbs.)	826	607	440	315	223	164	130
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.7"	- 21.3"	- 50.6"	- 99.0"	- 170.6"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.8"	- 39.1"	- 84.7"	- 153.5"
TRAJ: 300 yd. zero	- 1.5"	7.1"	8.5"	0.0"	- 22.1"	- 63.4"	- 127.9"
TRAJ: 400 yd. zero	- 1.5"	12.7"	19.6"	16.6"	0.0"	- 35.7"	- 94.7"
TRAJ: 500 yd. zero	- 1.5"	19.8"	33.9"	38.1"	28.6"	0.0"	- 51.8"
TRAJ: 600 yd. zero	- 1.5"	28.4"	51.2"	64.0"	63.2"	43.2"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2140	1818	1538	1295	1117	1004
ENERGY (ft. lbs.)	763	559	404	289	205	153	123
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.3"	-23.2"	-55.1"	-107.0"	-183.3"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-13.7"	-42.5"	-91.2"	-164.4"
TRAJ: 300 yd. zero	-1.5"	7.7"	9.2"	0.0"	-24.2"	-68.3"	-136.8"
TRAJ: 400 yd. zero	-1.5"	13.8"	21.3"	18.2"	0.0"	-38.0"	-100.5"
TRAJ: 500 yd. zero	-1.5"	21.4"	36.5"	41.0"	30.5"	0.0"	-54.8"
TRAJ: 600 yd. zero	-1.5"	30.6"	54.8"	68.4"	67.1"	45.7"	0.0"
VELOCITY (fps)	2400	2050	1739	1462	1236	1081	978
ENERGY (ft. lbs.)	704	514	369	261	186	143	117
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.0"	-25.6"	-60.7"	-117.6"	-199.7"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-15.0"	-46.7"	-100.1"	-178.6"
TRAJ: 300 yd. zero	-1.5"	8.5"	10.1"	0.0"	-26.6"	-74.9"	-148.5"
TRAJ: 400 yd. zero	-1.5"	15.2"	23.4"	20.0"	0.0"	-41.7"	-108.5"
TRAJ: 500 yd. zero	-1.5"	23.5"	40.0"	45.0"	33.4"	0.0"	-58.5"
TRAJ: 600 yd. zero	-1.5"	33.3"	59.6"	74.3"	72.4"	48.8"	0.0"
VELOCITY (fps)	2300	1961	1661	1396	1188	1051	956
ENERGY (ft. lbs.)	646	470	337	238	172	135	112
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.9"	-28.4"	-67.2"	-128.5"	-217.2"
TRAJ: 200 yd. zero	-1.5"	4.0"	0.0"	-16.5"	-51.4"	-108.7"	-193.5"
TRAJ: 300 yd. zero	-1.5"	9.5"	11.1"	0.0"	-29.3"	-81.1"	-160.3"
TRAJ: 400 yd. zero	-1.5"	16.8"	25.7"	22.0"	0.0"	-44.4"	-116.3"
TRAJ: 500 yd. zero	-1.5"	25.7"	43.5"	48.7"	35.5"	0.0"	-63.0"
TRAJ: 600 yd. zero	-1.5"	36.2"	64.5"	80.2"	77.6"	52.5"	0.0"

## 22 CALIBER (.224" Dia.) 55 GRAIN FULL METAL JACKET

SECTIONAL DENSITY: .157 BALLISTIC COEFFICIENT: .211

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3284	2809	2376	1992	1656	1365
ENERGY (ft. lbs.)	1764	1317	964	690	485	337	228
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-8.1"	-20.6"	-42.3"	-76.6"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.4"	-17.0"	-37.7"	-71.1"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.6"	0.0"	-9.8"	-28.7"	-60.3"
TRAJ: 400 yd. zero	-1.5"	5.2"	8.5"	7.4"	0.0"	-16.4"	-45.5"
TRAJ: 500 yd. zero	-1.5"	8.5"	15.1"	17.3"	13.2"	0.0"	-25.8"
TRAJ: 600 yd. zero	-1.5"	12.8"	23.7"	30.2"	30.4"	21.5"	0.0"
VELOCITY (fps)	3700	3191	2724	2300	1925	1599	1320
ENERGY (ft. lbs.)	1627	1244	906	646	453	312	213
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.7"	-22.3"	-45.5"	-82.0"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.7"	-18.3"	-40.5"	-76.0"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-10.6"	-30.9"	-64.5"
TRAJ: 400 yd. zero	-1.5"	5.6"	9.2"	8.0"	0.0"	-17.6"	-48.5"
TRAJ: 500 yd. zero	-1.5"	9.1"	16.2"	18.6"	14.1"	0.0"	-27.4"
TRAJ: 600 yd. zero	-1.5"	13.7"	25.4"	32.3"	32.4"	22.8"	0.0"
VELOCITY (fps)	3600	3099	2640	2225	1859	1543	1277
ENERGY (ft. lbs.)	1583	1173	851	605	422	291	199
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-9.4"	-23.9"	-48.8"	-87.8"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-6.1"	-19.5"	-43.3"	-81.3"
TRAJ: 300 yd. zero	-1.5"	3.1"	4.1"	0.0"	-11.3"	-33.1"	-69.0"
TRAJ: 400 yd. zero	-1.5"	6.0"	9.8"	8.5"	0.0"	-18.9"	-51.9"
TRAJ: 500 yd. zero	-1.5"	9.8"	17.4"	19.9"	15.1"	0.0"	-29.2"
TRAJ: 600 yd. zero	-1.5"	14.6"	27.1"	34.5"	34.7"	24.4"	0.0"
VELOCITY (fps)	3500	3007	2556	2151	1793	1497	1228
ENERGY (ft. lbs.)	1496	1105	798	565	393	267	184
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-10.2"	-25.8"	-52.1"	-94.3"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.6"	-20.9"	-46.0"	-86.9"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.4"	0.0"	-12.1"	-35.0"	-73.7"
TRAJ: 400 yd. zero	-1.5"	6.5"	10.5"	9.1"	0.0"	-19.8"	-55.6"
TRAJ: 500 yd. zero	-1.5"	10.4"	18.4"	21.0"	15.9"	0.0"	-31.7"
TRAJ: 600 yd. zero	-1.5"	15.7"	29.0"	36.9"	37.1"	26.5"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	2915	2472	2077	1729	1426	1190
ENERGY (ft. lbs.)	1412	1038	747	527	365	248	173
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-11.2"	-27.9"	-56.4"	-101.9"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-7.2"	-22.6"	-49.7"	-93.9"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.8"	0.0"	-12.9"	-37.7"	-79.5"
TRAJ: 400 yd. zero	-1.5"	7.0"	11.3"	9.7"	0.0"	-21.4"	-60.0"
TRAJ: 500 yd. zero	-1.5"	11.3"	19.9"	22.6"	17.2"	0.0"	-34.2"
TRAJ: 600 yd. zero	-1.5"	17.0"	31.3"	39.8"	40.0"	28.5"	0.0"
VELOCITY (fps)	3300	2824	2389	2004	1666	1374	1157
ENERGY (ft. lbs.)	1330	974	697	490	339	231	163
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-12.1"	-30.2"	-60.7"	-108.9"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.7"	-24.3"	-53.3"	-100.1"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.2"	0.0"	-13.9"	-40.3"	-84.5"
TRAJ: 400 yd. zero	-1.5"	7.6"	12.2"	10.5"	0.0"	-22.9"	-63.5"
TRAJ: 500 yd. zero	-1.5"	12.1"	21.3"	24.2"	18.3"	0.0"	-36.0"
TRAJ: 600 yd. zero	-1.5"	18.2"	33.4"	42.3"	42.4"	30.1"	0.0"
VELOCITY (fps)	3200	2732	2307	1931	1604	1324	1126
ENERGY (ft. lbs.)	1251	912	650	456	314	214	155
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-13.2"	-32.7"	-65.8"	-118.1"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-8.3"	-26.2"	-57.7"	-108.4"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.6"	0.0"	-15.1"	-43.8"	-91.7"
TRAJ: 400 yd. zero	-1.5"	8.2"	13.1"	11.3"	0.0"	-24.9"	-69.0"
TRAJ: 500 yd. zero	-1.5"	13.2"	23.1"	26.3"	20.0"	0.0"	-39.1"
TRAJ: 600 yd. zero	-1.5"	19.7"	36.2"	45.9"	46.0"	32.6"	0.0"
VELOCITY (fps)	3100	2640	2226	1859	1544	1277	1093
ENERGY (ft. lbs.)	1174	852	605	422	291	199	146
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-14.3"	-35.6"	-71.1"	-126.7"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-9.0"	-28.4"	-62.1"	-116.0"
TRAJ: 300 yd. zero	-1.5"	4.8"	6.0"	0.0"	-16.4"	-47.1"	-97.9"
TRAJ: 400 yd. zero	-1.5"	8.9"	14.2"	12.3"	0.0"	-26.6"	-73.3"
TRAJ: 500 yd. zero	-1.5"	14.2"	24.9"	28.3"	21.3"	0.0"	-41.3"
TRAJ: 600 yd. zero	-1.5"	21.1"	38.7"	49.0"	48.9"	34.5"	0.0"
VELOCITY (fps)	3000	2549	2145	1788	1475	1225	1062
ENERGY (ft. lbs.)	1099	794	562	391	266	183	138
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-15.6"	-38.4"	-77.3"	-137.5"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.7"	-30.5"	-67.5"	-125.6"
TRAJ: 300 yd. zero	-1.5"	5.2"	6.5"	0.0"	-17.5"	-51.2"	-106.1"
TRAJ: 400 yd. zero	-1.5"	9.6"	15.3"	13.1"	0.0"	-29.3"	-79.8"
TRAJ: 500 yd. zero	-1.5"	15.5"	27.0"	30.7"	23.5"	0.0"	-44.6"
TRAJ: 600 yd. zero	-1.5"	22.9"	41.9"	53.1"	53.2"	37.2"	0.0"
VELOCITY (fps)	2900	2458	2065	1718	1417	1185	1038
ENERGY (ft. lbs.)	1027	738	521	361	245	171	132
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-17.1"	-41.8"	-83.9"	-148.1"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.6"	-33.0"	-73.0"	-135.0"
TRAJ: 300 yd. zero	-1.5"	5.7"	7.1"	0.0"	-18.9"	-55.3"	-113.8"
TRAJ: 400 yd. zero	-1.5"	10.5"	16.5"	14.2"	0.0"	-31.7"	-85.4"
TRAJ: 500 yd. zero	-1.5"	16.8"	29.2"	33.2"	25.4"	0.0"	-47.3"
TRAJ: 600 yd. zero	-1.5"	24.7"	45.0"	56.9"	59.5"	37.6"	0.0"
VELOCITY (fps)	2800	2368	1985	1650	1361	1148	1015
ENERGY (ft. lbs.)	958	685	481	333	226	161	126
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-18.8"	-45.6"	-90.5"	-158.8"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-11.6"	-35.9"	-78.4"	-144.3"
TRAJ: 300 yd. zero	-1.5"	6.3"	7.7"	0.0"	-20.4"	-59.1"	-121.0"
TRAJ: 400 yd. zero	-1.5"	11.4"	18.0"	15.4"	0.0"	-33.5"	-90.3"
TRAJ: 500 yd. zero	-1.5"	18.1"	31.4"	35.5"	26.8"	0.0"	-50.1"
TRAJ: 600 yd. zero	-1.5"	26.5"	48.1"	60.5"	60.2"	41.8"	0.0"
VELOCITY (fps)	2700	2279	1906	1583	1307	1111	990
ENERGY (ft. lbs.)	891	634	444	306	209	151	120
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.3"	-20.5"	-49.7"	-98.4"	-172.0"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-12.4"	-38.9"	-85.6"	-155.9"
TRAJ: 300 yd. zero	-1.5"	6.8"	8.3"	0.0"	-22.3"	-64.2"	-131.0"
TRAJ: 400 yd. zero	-1.5"	12.4"	19.5"	16.8"	0.0"	-36.3"	-97.4"
TRAJ: 500 yd. zero	-1.5"	19.7"	34.0"	38.6"	29.1"	0.0"	-53.8"
TRAJ: 600 yd. zero	-1.5"	28.7"	52.0"	65.5"	65.0"	44.9"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2190	1828	1508	1249	1076	967
ENERGY (ft. lbs.)	826	586	408	278	191	142	114
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 22.5"	- 54.6"	- 107.6"	- 186.2"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 13.6"	- 42.7"	- 92.7"	- 168.4"
TRAJ: 300 yd. zero	- 1.5"	7.5"	9.1"	0.0"	- 24.5"	- 70.0"	- 141.2"
TRAJ: 400 yd. zero	- 1.5"	13.7"	21.4"	18.4"	0.0"	- 39.3"	- 104.3"
TRAJ: 500 yd. zero	- 1.5"	21.5"	37.1"	42.0"	31.5"	0.0"	- 57.1"
TRAJ: 600 yd. zero	- 1.5"	31.0"	56.1"	70.6"	69.8"	47.8"	0.0"
VELOCITY (fps)	2500	2102	1750	1444	1203	1049	947
ENERGY (ft. lbs.)	763	539	374	255	177	134	110
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.6"	- 24.7"	- 59.7"	- 117.1"	- 201.4"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 14.7"	- 46.4"	- 100.5"	- 181.4"
TRAJ: 300 yd. zero	- 1.5"	8.2"	9.9"	0.0"	- 26.7"	- 75.8"	- 151.9"
TRAJ: 400 yd. zero	- 1.5"	14.9"	23.2"	20.0"	0.0"	- 42.4"	- 111.8"
TRAJ: 500 yd. zero	- 1.5"	23.4"	40.2"	45.5"	34.0"	0.0"	- 60.8"
TRAJ: 600 yd. zero	- 1.5"	33.6"	60.5"	76.0"	74.6"	50.7"	0.0"
VELOCITY (fps)	2400	2013	1674	1380	1161	1023	927
ENERGY (ft. lbs.)	704	495	342	233	165	128	105
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.2"	- 27.1"	- 65.0"	- 126.7"	- 216.3"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 16.2"	- 50.5"	- 108.5"	- 194.5"
TRAJ: 300 yd. zero	- 1.5"	9.1"	10.9"	0.0"	- 28.8"	- 81.4"	- 161.9"
TRAJ: 400 yd. zero	- 1.5"	16.3"	25.3"	21.6"	0.0"	- 45.3"	- 118.7"
TRAJ: 500 yd. zero	- 1.5"	25.3"	43.4"	48.8"	36.3"	0.0"	- 64.2"
TRAJ: 600 yd. zero	- 1.5"	36.1"	64.8"	81.0"	79.1"	53.6"	0.0"
VELOCITY (fps)	2300	1925	1599	1320	1123	999	905
ENERGY (ft. lbs.)	646	453	312	213	154	122	100
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.2"	- 30.2"	- 71.8"	- 138.1"	- 233.5"
TRAJ: 200 yd. zero	- 1.5"	4.1"	0.0"	- 17.8"	- 55.3"	- 117.5"	- 208.8"
TRAJ: 300 yd. zero	- 1.5"	10.1"	11.9"	0.0"	- 31.5"	- 87.7"	- 173.0"
TRAJ: 400 yd. zero	- 1.5"	18.0"	27.7"	23.7"	0.0"	- 48.2"	- 125.7"
TRAJ: 500 yd. zero	- 1.5"	27.6"	47.0"	52.6"	38.6"	0.0"	- 67.7"
TRAJ: 600 yd. zero	- 1.5"	38.9"	69.6"	86.5"	83.8"	56.5"	0.0"

**22 CALIBER (.224" Dia.) 60 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .171 BALLISTIC COEFFICIENT: .266

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3700	3293	2912	2557	2232	1937	1672
ENERGY (ft. lbs.)	1824	1445	1130	871	664	500	373
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.7"	- 7.8"	- 19.3"	- 38.0"	- 65.8"
TRAJ: 200 yd. zero	- 1.5"	.9"	0.0"	- 5.1"	- 15.7"	- 33.6"	- 60.5"
TRAJ: 300 yd. zero	- 1.5"	2.6"	3.4"	0.0"	- 8.9"	- 25.0"	- 50.2"
TRAJ: 400 yd. zero	- 1.5"	4.8"	7.9"	6.7"	0.0"	- 13.9"	- 36.8"
TRAJ: 500 yd. zero	- 1.5"	7.6"	13.4"	15.0"	11.1"	0.0"	- 20.1"
TRAJ: 600 yd. zero	- 1.5"	11.0"	20.2"	25.1"	24.6"	16.8"	0.0"
VELOCITY (fps)	3600	3199	2825	2476	2158	1870	1614
ENERGY (ft. lbs.)	1727	1364	1063	817	621	466	347
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.9"	- 8.3"	- 20.4"	- 40.2"	- 70.2"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.4"	- 16.6"	- 35.3"	- 64.4"
TRAJ: 300 yd. zero	- 1.5"	2.8"	3.6"	0.0"	- 9.3"	- 26.3"	- 53.6"
TRAJ: 400 yd. zero	- 1.5"	5.1"	8.3"	7.0"	0.0"	- 14.6"	- 39.5"
TRAJ: 500 yd. zero	- 1.5"	8.0"	14.2"	15.8"	11.7"	0.0"	- 21.9"
TRAJ: 600 yd. zero	- 1.5"	11.7"	21.5"	26.8"	26.3"	18.3"	0.0"
VELOCITY (fps)	3500	3106	2737	2396	2086	1805	1557
ENERGY (ft. lbs.)	1632	1285	999	765	580	434	323
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 9.1"	- 22.3"	- 43.7"	- 75.8"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.8"	- 17.9"	- 38.3"	- 69.3"
TRAJ: 300 yd. zero	- 1.5"	3.0"	3.9"	0.0"	- 10.1"	- 28.5"	- 57.6"
TRAJ: 400 yd. zero	- 1.5"	5.6"	9.0"	7.6"	0.0"	- 15.8"	- 42.4"
TRAJ: 500 yd. zero	- 1.5"	8.7"	15.3"	17.1"	12.7"	0.0"	- 23.3"
TRAJ: 600 yd. zero	- 1.5"	12.6"	23.1"	28.8"	28.3"	19.5"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3012	2650	2316	2013	1740	1491
ENERGY (ft. lbs.)	1541	1209	936	715	540	403	296
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.8"	-23.9"	-46.6"	-80.8"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.2"	-19.0"	-40.5"	-73.6"
TRAJ: 300 yd. zero	-1.5"	3.3"	4.2"	0.0"	-10.7"	-30.2"	-61.1"
TRAJ: 400 yd. zero	-1.5"	6.0"	9.5"	8.1"	0.0"	-16.7"	-45.0"
TRAJ: 500 yd. zero	-1.5"	9.3"	16.2"	18.1"	13.4"	0.0"	-24.9"
TRAJ: 600 yd. zero	-1.5"	13.5"	24.5"	30.8"	30.0"	20.8"	0.0"
VELOCITY (fps)	3300	2919	2563	2237	1942	1676	1437
ENERGY (ft. lbs.)	1451	1135	876	667	502	375	275
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.8"	-26.1"	-51.5"	-87.9"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.8"	-20.7"	-44.3"	-79.8"
TRAJ: 300 yd. zero	-1.5"	3.6"	4.5"	0.0"	-11.7"	-32.9"	-66.2"
TRAJ: 400 yd. zero	-1.5"	6.5"	10.4"	8.8"	0.0"	-18.3"	-48.6"
TRAJ: 500 yd. zero	-1.5"	10.2"	17.7"	19.8"	14.7"	0.0"	-26.6"
TRAJ: 600 yd. zero	-1.5"	14.7"	26.6"	33.1"	32.5"	22.2"	0.0"
VELOCITY (fps)	3200	2825	2477	2159	1871	1614	1383
ENERGY (ft. lbs.)	1365	1064	818	621	466	347	255
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.6"	-27.9"	-54.5"	-94.3"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.2"	-22.0"	-47.2"	-85.5"
TRAJ: 300 yd. zero	-1.5"	3.9"	4.8"	0.0"	-12.4"	-35.1"	-71.0"
TRAJ: 400 yd. zero	-1.5"	7.0"	11.0"	9.3"	0.0"	-19.5"	-52.4"
TRAJ: 500 yd. zero	-1.5"	10.9"	18.9"	21.1"	15.7"	0.0"	-28.9"
TRAJ: 600 yd. zero	-1.5"	15.7"	28.5"	35.5"	34.9"	24.1"	0.0"
VELOCITY (fps)	3100	2732	2391	2081	1801	1554	1332
ENERGY (ft. lbs.)	1281	995	762	577	432	322	236
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.6"	-30.5"	-59.1"	-102.0"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.7"	-23.9"	-50.9"	-92.2"
TRAJ: 300 yd. zero	-1.5"	4.2"	5.2"	0.0"	-13.5"	-38.0"	-76.7"
TRAJ: 400 yd. zero	-1.5"	7.6"	12.0"	10.2"	0.0"	-21.0"	-56.3"
TRAJ: 500 yd. zero	-1.5"	11.8"	20.4"	22.8"	16.8"	0.0"	-31.0"
TRAJ: 600 yd. zero	-1.5"	17.0"	30.7"	38.4"	37.6"	25.9"	0.0"
VELOCITY (fps)	3000	2639	2306	2004	1732	1484	1275
ENERGY (ft. lbs.)	1199	928	709	535	400	294	217
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.9"	-33.0"	-63.6"	-110.3"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.5"	-25.8"	-54.6"	-99.4"
TRAJ: 300 yd. zero	-1.5"	4.6"	5.7"	0.0"	-14.5"	-40.4"	-82.4"
TRAJ: 400 yd. zero	-1.5"	8.3"	12.9"	10.9"	0.0"	-22.3"	-60.6"
TRAJ: 500 yd. zero	-1.5"	12.7"	21.9"	24.3"	17.9"	0.0"	-33.8"
TRAJ: 600 yd. zero	-1.5"	18.4"	33.2"	41.2"	40.5"	28.2"	0.0"
VELOCITY (fps)	2900	2546	2222	1928	1664	1426	1230
ENERGY (ft. lbs.)	1121	864	658	495	369	271	202
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-15.0"	-35.6"	-69.0"	-119.3"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.1"	-27.7"	-59.1"	-107.5"
TRAJ: 300 yd. zero	-1.5"	5.0"	6.1"	0.0"	-15.5"	-43.9"	-89.3"
TRAJ: 400 yd. zero	-1.5"	8.9"	13.9"	11.7"	0.0"	-24.4"	-65.9"
TRAJ: 500 yd. zero	-1.5"	13.8"	23.7"	26.4"	19.6"	0.0"	-36.5"
TRAJ: 600 yd. zero	-1.5"	19.9"	35.9"	44.7"	44.0"	30.5"	0.0"
VELOCITY (fps)	2800	2454	2138	1852	1598	1369	1188
ENERGY (ft. lbs.)	1045	802	609	457	340	250	188
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.7"	-39.2"	-75.5"	-130.1"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.0"	-30.3"	-64.3"	-116.8"
TRAJ: 300 yd. zero	-1.5"	5.6"	6.7"	0.0"	-16.8"	-47.5"	-96.6"
TRAJ: 400 yd. zero	-1.5"	9.8"	15.2"	12.7"	0.0"	-26.4"	-71.3"
TRAJ: 500 yd. zero	-1.5"	15.1"	25.8"	28.5"	21.2"	0.0"	-39.5"
TRAJ: 600 yd. zero	-1.5"	21.7"	38.9"	48.3"	47.5"	33.0"	0.0"
VELOCITY (fps)	2700	2362	2055	1777	1533	1315	1151
ENERGY (ft. lbs.)	971	743	563	421	313	230	176
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-18.1"	-42.6"	-82.1"	-140.9"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.8"	-32.8"	-69.9"	-126.2"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.2"	0.0"	-18.3"	-51.8"	-104.5"
TRAJ: 400 yd. zero	-1.5"	10.7"	16.4"	13.8"	0.0"	-28.8"	-76.9"
TRAJ: 500 yd. zero	-1.5"	16.4"	28.0"	31.1"	23.1"	0.0"	-42.3"
TRAJ: 600 yd. zero	-1.5"	23.5"	42.1"	52.3"	51.3"	35.3"	0.0"



## 22 CALIBER (.224" Dia.) 60 GRAIN SPIRE POINT

SECTIONAL DENSITY: .171 BALLISTIC COEFFICIENT: .262

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3700	3287	2901	2542	2213	1916	1650
ENERGY (ft. lbs.)	1824	1440	1122	861	653	489	363
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.7"	-19.2"	-37.9"	-66.4"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.0"	-15.6"	-33.4"	-61.0"
TRAJ: 300 yd. zero	-1.5"	2.6"	3.4"	0.0"	-8.8"	-24.9"	-50.9"
TRAJ: 400 yd. zero	-1.5"	4.8"	7.8"	6.6"	0.0"	-13.9"	-37.6"
TRAJ: 500 yd. zero	-1.5"	7.6"	13.4"	15.0"	11.1"	0.0"	-20.9"
TRAJ: 600 yd. zero	-1.5"	11.1"	20.4"	25.5"	25.1"	17.5"	0.0"
VELOCITY (fps)	3600	3194	2814	2461	2140	1850	1592
ENERGY (ft. lbs.)	1727	1359	1055	807	610	456	338
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.3"	-20.7"	-40.9"	-71.4"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.4"	-16.8"	-36.1"	-65.6"
TRAJ: 300 yd. zero	-1.5"	2.8"	3.6"	0.0"	-9.5"	-27.0"	-54.6"
TRAJ: 400 yd. zero	-1.5"	5.2"	8.4"	7.2"	0.0"	-15.0"	-40.3"
TRAJ: 500 yd. zero	-1.5"	8.2"	14.5"	16.2"	12.0"	0.0"	-22.2"
TRAJ: 600 yd. zero	-1.5"	11.9"	21.9"	27.3"	26.9"	18.6"	0.0"
VELOCITY (fps)	3500	3100	2727	2381	2068	1784	1536
ENERGY (ft. lbs.)	1632	1281	991	756	570	424	314
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-9.2"	-22.4"	-43.8"	-76.3"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.9"	-18.0"	-38.4"	-69.8"
TRAJ: 300 yd. zero	-1.5"	3.1"	4.0"	0.0"	-10.1"	-28.5"	-57.9"
TRAJ: 400 yd. zero	-1.5"	5.6"	9.0"	7.6"	0.0"	-15.8"	-42.7"
TRAJ: 500 yd. zero	-1.5"	8.8"	15.4"	17.1"	12.7"	0.0"	-23.7"
TRAJ: 600 yd. zero	-1.5"	12.7"	23.3"	29.0"	28.5"	19.8"	0.0"
VELOCITY (fps)	3400	3006	2639	2302	1996	1720	1471
ENERGY (ft. lbs.)	1541	1205	928	706	531	394	288
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.9"	-24.2"	-47.6"	-82.4"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.3"	-19.4"	-41.5"	-75.1"
TRAJ: 300 yd. zero	-1.5"	3.3"	4.2"	0.0"	-10.9"	-31.0"	-62.5"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.7"	8.2"	0.0"	-17.2"	-46.0"
TRAJ: 500 yd. zero	-1.5"	9.5"	16.6"	18.6"	13.8"	0.0"	-25.3"
TRAJ: 600 yd. zero	-1.5"	13.7"	25.1"	31.3"	30.7"	21.1"	0.0"
VELOCITY (fps)	3300	2913	2553	2223	1925	1658	1417
ENERGY (ft. lbs.)	1451	1131	868	659	494	366	268
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.8"	-26.0"	-51.0"	-88.6"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.7"	-20.6"	-44.1"	-80.4"
TRAJ: 300 yd. zero	-1.5"	3.6"	4.5"	0.0"	-11.6"	-32.9"	-67.0"
TRAJ: 400 yd. zero	-1.5"	6.5"	10.3"	8.7"	0.0"	-18.4"	-49.5"
TRAJ: 500 yd. zero	-1.5"	10.2"	17.7"	19.8"	14.7"	0.0"	-27.4"
TRAJ: 600 yd. zero	-1.5"	14.8"	26.8"	33.5"	33.0"	22.9"	0.0"
VELOCITY (fps)	3200	2820	2467	2145	1854	1596	1365
ENERGY (ft. lbs.)	1365	1060	811	613	458	340	248
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.7"	-28.4"	-55.2"	-95.7"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.3"	-22.5"	-47.8"	-86.8"
TRAJ: 300 yd. zero	-1.5"	3.9"	4.9"	0.0"	-12.7"	-35.6"	-72.1"
TRAJ: 400 yd. zero	-1.5"	7.1"	11.3"	9.5"	0.0"	-19.7"	-53.0"
TRAJ: 500 yd. zero	-1.5"	11.1"	19.2"	21.4"	15.8"	0.0"	-29.3"
TRAJ: 600 yd. zero	-1.5"	16.0"	28.9"	36.1"	35.4"	24.5"	0.0"
VELOCITY (fps)	3100	2727	2381	2068	1784	1536	1315
ENERGY (ft. lbs.)	1281	991	756	570	424	314	230
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.8"	-30.6"	-59.5"	-103.1"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.8"	-24.0"	-51.2"	-93.1"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.2"	0.0"	-13.5"	-38.1"	-77.3"
TRAJ: 400 yd. zero	-1.5"	7.7"	12.0"	10.1"	0.0"	-21.1"	-57.0"
TRAJ: 500 yd. zero	-1.5"	11.9"	20.5"	22.9"	17.0"	0.0"	-31.6"
TRAJ: 600 yd. zero	-1.5"	17.2"	31.0"	38.7"	38.1"	26.4"	0.0"
VELOCITY (fps)	3000	2633	2296	1991	1716	1467	1260
ENERGY (ft. lbs.)	1199	924	703	528	392	287	211
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-14.1"	-33.2"	-64.4"	-112.0"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.6"	-26.0"	-55.3"	-101.1"
TRAJ: 300 yd. zero	-1.5"	4.7"	5.8"	0.0"	-14.4"	-40.9"	-83.8"
TRAJ: 400 yd. zero	-1.5"	8.3"	13.0"	10.9"	0.0"	-22.8"	-62.1"
TRAJ: 500 yd. zero	-1.5"	12.9"	22.2"	24.6"	18.3"	0.0"	-34.7"
TRAJ: 600 yd. zero	-1.5"	18.7"	33.7"	41.9"	41.4"	28.9"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2541	2212	1915	1649	1410	1215
ENERGY (ft. lbs.)	1121	860	652	489	362	265	197
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 15.2"	- 36.3"	- 70.1"	- 121.0"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 9.2"	- 28.4"	- 60.1"	- 109.1"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.2"	0.0"	- 16.0"	- 44.7"	- 90.5"
TRAJ: 400 yd. zero	- 1.5"	9.1"	14.2"	12.0"	0.0"	- 24.6"	- 66.5"
TRAJ: 500 yd. zero	- 1.5"	14.0"	24.1"	26.8"	19.7"	0.0"	- 36.8"
TRAJ: 600 yd. zero	- 1.5"	20.2"	36.4"	45.3"	44.3"	30.7"	0.0"
VELOCITY (fps)	2800	2449	2129	1839	1583	1354	1175
ENERGY (ft. lbs.)	1045	799	604	451	334	244	184
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 16.5"	- 39.4"	- 75.9"	- 131.3"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 9.9"	- 30.6"	- 65.0"	- 118.2"
TRAJ: 300 yd. zero	- 1.5"	5.5"	6.6"	0.0"	- 17.3"	- 48.4"	- 98.2"
TRAJ: 400 yd. zero	- 1.5"	9.9"	15.3"	13.0"	0.0"	- 26.6"	- 72.2"
TRAJ: 500 yd. zero	- 1.5"	15.2"	26.0"	29.0"	21.3"	0.0"	- 40.1"
TRAJ: 600 yd. zero	- 1.5"	21.9"	39.4"	49.1"	48.1"	33.5"	0.0"
VELOCITY (fps)	2700	2357	2046	1765	1509	1293	1134
ENERGY (ft. lbs.)	971	740	558	415	304	223	171
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 18.4"	- 43.3"	- 83.5"	- 143.8"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 11.0"	- 33.4"	- 71.1"	- 128.9"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.4"	0.0"	- 18.6"	- 52.6"	- 106.8"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.7"	14.0"	0.0"	- 29.3"	- 78.8"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.5"	31.6"	23.5"	0.0"	- 43.6"
TRAJ: 600 yd. zero	- 1.5"	24.0"	43.0"	53.4"	52.6"	36.3"	0.0"

## 22 CALIBER (.227" Dia.) 70 GRAIN SPIRE POINT

SECTIONAL DENSITY: .194 BALLISTIC COEFFICIENT: .288

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3135	2792	2472	2177	1909	1666
ENERGY (ft. lbs.)	1905	1528	1212	950	737	566	432
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.8"	- 21.2"	- 41.1"	- 70.7"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.6"	- 17.0"	- 35.8"	- 64.4"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.8"	0.0"	- 9.4"	- 26.4"	- 53.1"
TRAJ: 400 yd. zero	- 1.5"	5.3"	8.5"	7.1"	0.0"	- 14.5"	- 38.8"
TRAJ: 500 yd. zero	- 1.5"	8.2"	14.3"	15.8"	11.6"	0.0"	- 21.4"
TRAJ: 600 yd. zero	- 1.5"	11.8"	21.5"	26.6"	25.9"	17.9"	0.0"
VELOCITY (fps)	3400	3041	2704	2390	2103	1841	1606
ENERGY (ft. lbs.)	1797	1438	1137	888	687	527	401
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.5"	- 22.9"	- 44.3"	- 75.9"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.9"	- 18.2"	- 38.5"	- 68.9"
TRAJ: 300 yd. zero	- 1.5"	3.2"	4.0"	0.0"	- 10.2"	- 28.5"	- 56.9"
TRAJ: 400 yd. zero	- 1.5"	5.7"	9.1"	7.7"	0.0"	- 15.7"	- 41.5"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.4"	17.1"	12.8"	0.0"	- 22.7"
TRAJ: 600 yd. zero	- 1.5"	12.7"	23.0"	28.5"	27.7"	18.9"	0.0"
VELOCITY (fps)	3300	2947	2616	2309	2029	1774	1548
ENERGY (ft. lbs.)	1693	1350	1064	829	640	489	372
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.4"	- 25.0"	- 48.3"	- 83.0"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.5"	- 19.8"	- 41.8"	- 75.2"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.4"	0.0"	- 11.1"	- 30.9"	- 62.1"
TRAJ: 400 yd. zero	- 1.5"	6.3"	9.9"	8.3"	0.0"	- 17.0"	- 45.4"
TRAJ: 500 yd. zero	- 1.5"	9.7"	16.7"	18.6"	13.7"	0.0"	- 24.9"
TRAJ: 600 yd. zero	- 1.5"	13.8"	25.1"	31.1"	30.3"	20.8"	0.0"
VELOCITY (fps)	3200	2853	2528	2229	1956	1708	1481
ENERGY (ft. lbs.)	1592	1265	994	773	595	454	341
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.1"	- 26.6"	- 51.3"	- 87.7"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.9"	- 20.9"	- 44.3"	- 79.3"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.6"	0.0"	- 11.7"	- 32.7"	- 65.4"
TRAJ: 400 yd. zero	- 1.5"	6.7"	10.5"	8.8"	0.0"	- 18.0"	- 47.8"
TRAJ: 500 yd. zero	- 1.5"	10.3"	17.7"	19.7"	14.5"	0.0"	- 26.1"
TRAJ: 600 yd. zero	- 1.5"	14.6"	26.5"	32.7"	31.9"	21.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2759	2441	2150	1883	1644	1425
ENERGY (ft. lbs.)	1494	1184	927	718	551	420	316
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.3"	- 29.2"	- 55.8"	- 95.4"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.5"	- 22.9"	- 47.9"	- 85.9"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.1"	0.0"	- 12.8"	- 35.3"	- 70.7"
TRAJ: 400 yd. zero	- 1.5"	7.3"	11.5"	9.6"	0.0"	- 19.2"	- 51.5"
TRAJ: 500 yd. zero	- 1.5"	11.2"	19.2"	21.2"	15.4"	0.0"	- 28.3"
TRAJ: 600 yd. zero	- 1.5"	15.9"	28.6"	35.4"	34.4"	23.7"	0.0"
VELOCITY (fps)	3000	2665	2355	2071	1811	1581	1370
ENERGY (ft. lbs.)	1399	1105	862	667	510	388	292
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.4"	- 31.4"	- 60.6"	- 103.6"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.0"	- 24.3"	- 51.7"	- 93.0"
TRAJ: 300 yd. zero	- 1.5"	4.5"	5.4"	0.0"	- 13.5"	- 38.3"	- 76.8"
TRAJ: 400 yd. zero	- 1.5"	7.9"	12.2"	10.2"	0.0"	- 21.3"	- 56.4"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.7"	23.0"	17.1"	0.0"	- 30.8"
TRAJ: 600 yd. zero	- 1.5"	17.3"	31.0"	38.4"	37.6"	25.7"	0.0"
VELOCITY (fps)	2900	2572	2289	1992	1741	1509	1309
ENERGY (ft. lbs.)	1308	1028	801	617	471	354	267
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.6"	- 34.5"	- 65.7"	- 112.1"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.8"	- 26.7"	- 56.0"	- 100.5"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.9"	0.0"	- 14.9"	- 41.2"	- 82.7"
TRAJ: 400 yd. zero	- 1.5"	8.6"	13.4"	11.2"	0.0"	- 22.5"	- 60.3"
TRAJ: 500 yd. zero	- 1.5"	13.1"	22.4"	24.7"	18.1"	0.0"	- 33.3"
TRAJ: 600 yd. zero	- 1.5"	18.7"	33.5"	41.4"	40.3"	27.8"	0.0"
VELOCITY (fps)	2800	2479	2184	1915	1671	1449	1260
ENERGY (ft. lbs.)	1219	955	742	570	434	326	247
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.8"	- 37.1"	- 71.1"	- 121.7"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.5"	- 28.6"	- 60.5"	- 109.1"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.3"	0.0"	- 16.0"	- 44.7"	- 90.1"
TRAJ: 400 yd. zero	- 1.5"	9.3"	14.3"	12.0"	0.0"	- 24.7"	- 66.0"
TRAJ: 500 yd. zero	- 1.5"	14.2"	24.2"	26.9"	19.8"	0.0"	- 36.3"
TRAJ: 600 yd. zero	- 1.5"	20.3"	36.4"	45.1"	44.1"	30.3"	0.0"
VELOCITY (fps)	2700	2387	2100	1838	1604	1390	1214
ENERGY (ft. lbs.)	1133	886	685	525	400	300	229
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.6"	- 40.8"	- 77.7"	- 132.8"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.4"	- 31.3"	- 65.8"	- 118.5"
TRAJ: 300 yd. zero	- 1.5"	5.9"	7.0"	0.0"	- 17.3"	- 48.3"	- 97.5"
TRAJ: 400 yd. zero	- 1.5"	10.2"	15.7"	13.0"	0.0"	- 26.6"	- 71.5"
TRAJ: 500 yd. zero	- 1.5"	15.5"	26.3"	29.0"	21.3"	0.0"	- 39.5"
TRAJ: 600 yd. zero	- 1.5"	22.1"	39.5"	48.8"	47.7"	33.0"	0.0"
VELOCITY (fps)	2600	2295	2016	1762	1537	1333	1173
ENERGY (ft. lbs.)	1051	819	632	483	367	276	214
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.1"	- 44.2"	- 84.2"	- 144.2"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.2"	- 33.8"	- 71.2"	- 128.5"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.5"	0.0"	- 18.8"	- 52.4"	- 105.9"
TRAJ: 400 yd. zero	- 1.5"	11.1"	16.9"	14.1"	0.0"	- 28.9"	- 77.7"
TRAJ: 500 yd. zero	- 1.5"	16.9"	28.5"	31.4"	23.1"	0.0"	- 43.0"
TRAJ: 600 yd. zero	- 1.5"	24.0"	42.9"	53.0"	51.9"	35.9"	0.0"
VELOCITY (fps)	2500	2203	1932	1687	1462	1271	1130
ENERGY (ft. lbs.)	972	755	581	442	332	251	199
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 21.5"	- 49.2"	- 93.5"	- 158.8"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 12.6"	- 37.4"	- 78.7"	- 141.1"
TRAJ: 300 yd. zero	- 1.5"	7.2"	8.4"	0.0"	- 20.5"	- 57.6"	- 115.8"
TRAJ: 400 yd. zero	- 1.5"	12.3"	18.7"	15.4"	0.0"	- 32.0"	- 85.0"
TRAJ: 500 yd. zero	- 1.5"	18.7"	31.5"	34.6"	25.6"	0.0"	- 46.6"
TRAJ: 600 yd. zero	- 1.5"	26.5"	47.0"	57.9"	56.7"	38.9"	0.0"

**6 MM (.243" Dia.) 70 GRAIN SPIRE POINT**  
 SECTIONAL DENSITY: .169 BALLISTIC COEFFICIENT: .276

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3700	3310	2944	2602	2286	1998	1737
ENERGY (ft. lbs.)	2128	1704	1348	1052	812	621	469
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.5"	-18.7"	-36.6"	-63.5"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-4.9"	-15.2"	-32.2"	-58.3"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.3"	0.0"	-8.6"	-23.9"	-48.3"
TRAJ: 400 yd. zero	-1.5"	4.7"	7.6"	6.5"	0.0"	-13.1"	-35.4"
TRAJ: 500 yd. zero	-1.5"	7.3"	12.9"	14.4"	10.6"	0.0"	-19.6"
TRAJ: 600 yd. zero	-1.5"	10.6"	19.4"	24.2"	23.6"	16.4"	0.0"
VELOCITY (fps)	3600	3216	2856	2520	2211	1930	1677
ENERGY (ft. lbs.)	2015	1608	1268	987	760	579	437
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.2"	-20.1"	-39.4"	-67.9"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.3"	-16.2"	-34.5"	-62.1"
TRAJ: 300 yd. zero	-1.5"	2.8"	3.6"	0.0"	-9.0"	-25.5"	-51.4"
TRAJ: 400 yd. zero	-1.5"	5.0"	8.1"	6.8"	0.0"	-14.2"	-37.7"
TRAJ: 500 yd. zero	-1.5"	7.9"	13.8"	15.4"	11.4"	0.0"	-20.6"
TRAJ: 600 yd. zero	-1.5"	11.3"	20.7"	25.7"	25.2"	17.2"	0.0"
VELOCITY (fps)	3500	3122	2768	2439	2137	1863	1618
ENERGY (ft. lbs.)	1905	1516	1191	924	710	540	407
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.8"	-21.5"	-41.9"	-72.8"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.6"	-17.3"	-36.6"	-66.5"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-9.8"	-27.2"	-55.2"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.7"	7.4"	0.0"	-14.9"	-40.5"
TRAJ: 500 yd. zero	-1.5"	8.4"	14.7"	16.3"	12.0"	0.0"	-22.5"
TRAJ: 600 yd. zero	-1.5"	12.1"	22.2"	27.6"	27.0"	18.8"	0.0"
VELOCITY (fps)	3400	3028	2680	2358	2064	1796	1560
ENERGY (ft. lbs.)	1797	1426	1117	864	662	502	378
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.6"	-23.2"	-45.2"	-78.3"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.1"	-18.5"	-39.3"	-71.2"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.1"	0.0"	-10.3"	-29.1"	-59.0"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.3"	7.8"	0.0"	-16.1"	-43.4"
TRAJ: 500 yd. zero	-1.5"	9.1"	15.8"	17.5"	13.0"	0.0"	-24.0"
TRAJ: 600 yd. zero	-1.5"	13.1"	23.8"	29.5"	29.0"	20.0"	0.0"
VELOCITY (fps)	3300	2935	2593	2278	1991	1731	1493
ENERGY (ft. lbs.)	1693	1339	1045	807	616	466	347
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.4"	-25.2"	-49.1"	-84.6"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.5"	-19.9"	-42.5"	-76.7"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.3"	0.0"	-11.2"	-31.7"	-63.7"
TRAJ: 400 yd. zero	-1.5"	6.3"	10.0"	8.5"	0.0"	-17.6"	-46.8"
TRAJ: 500 yd. zero	-1.5"	9.8"	17.0"	19.0"	14.1"	0.0"	-25.6"
TRAJ: 600 yd. zero	-1.5"	14.1"	25.6"	31.9"	31.2"	21.4"	0.0"
VELOCITY (fps)	3200	2841	2506	2198	1919	1667	1438
ENERGY (ft. lbs.)	1592	1255	976	751	572	432	321
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.5"	-27.3"	-52.9"	-90.8"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.1"	-21.4"	-45.5"	-82.0"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.9"	-33.6"	-67.7"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.7"	9.0"	0.0"	-18.7"	-49.8"
TRAJ: 500 yd. zero	-1.5"	10.6"	18.2"	20.2"	15.0"	0.0"	-27.3"
TRAJ: 600 yd. zero	-1.5"	15.1"	27.3"	33.9"	33.3"	22.8"	0.0"
VELOCITY (fps)	3100	2747	2419	2120	1847	1604	1383
ENERGY (ft. lbs.)	1494	1173	910	699	530	400	297
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-12.3"	-29.5"	-56.9"	-98.0"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.5"	-23.1"	-48.9"	-88.4"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.1"	0.0"	-13.0"	-36.3"	-73.3"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.6"	9.8"	0.0"	-20.0"	-53.7"
TRAJ: 500 yd. zero	-1.5"	11.4"	19.6"	21.8"	16.1"	0.0"	-29.6"
TRAJ: 600 yd. zero	-1.5"	16.3"	29.5"	36.7"	35.9"	24.7"	0.0"
VELOCITY (fps)	3000	2654	2334	2041	1776	1542	1331
ENERGY (ft. lbs.)	1399	1095	847	648	491	370	275
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-13.7"	-32.5"	-62.3"	-106.6"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.3"	-25.3"	-53.3"	-95.8"
TRAJ: 300 yd. zero	-1.5"	4.6"	5.6"	0.0"	-14.2"	-39.4"	-79.2"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.7"	10.7"	0.0"	-21.5"	-57.8"
TRAJ: 500 yd. zero	-1.5"	12.5"	21.3"	23.7"	17.3"	0.0"	-31.9"
TRAJ: 600 yd. zero	-1.5"	17.8"	32.0"	39.6"	38.6"	26.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2561	2248	1964	1707	1472	1274
ENERGY (ft. lbs.)	1308	1019	786	600	453	337	252
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.7"	- 34.9"	- 66.9"	- 115.1"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.9"	- 27.1"	- 57.1"	- 103.3"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.9"	0.0"	- 15.2"	- 42.2"	- 85.5"
TRAJ: 400 yd. zero	- 1.5"	8.7"	13.6"	11.4"	0.0"	- 23.2"	- 62.6"
TRAJ: 500 yd. zero	- 1.5"	13.4"	22.9"	25.4"	18.6"	0.0"	- 34.8"
TRAJ: 600 yd. zero	- 1.5"	19.2"	34.5"	42.8"	41.8"	29.0"	0.0"

**6 MM (.243" Dia.) 75 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .181 BALLISTIC COEFFICIENT: .299

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3242	2905	2588	2295	2026	1780
ENERGY (ft. lbs.)	2159	1751	1406	1116	877	684	528
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.8"	- 7.9"	- 19.3"	- 37.3"	- 64.1"
TRAJ: 200 yd. zero	- 1.5"	.9"	0.0"	- 5.1"	- 15.5"	- 32.6"	- 58.5"
TRAJ: 300 yd. zero	- 1.5"	2.7"	3.4"	0.0"	- 8.6"	- 24.0"	- 48.2"
TRAJ: 400 yd. zero	- 1.5"	4.8"	7.8"	6.5"	0.0"	- 13.1"	- 35.2"
TRAJ: 500 yd. zero	- 1.5"	7.5"	13.1"	14.4"	10.5"	0.0"	- 19.4"
TRAJ: 600 yd. zero	- 1.5"	10.7"	19.5"	24.1"	23.5"	16.2"	0.0"
VELOCITY (fps)	3500	3148	2816	2506	2219	1956	1717
ENERGY (ft. lbs.)	2041	1651	1321	1046	820	637	491
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.0"	- 8.7"	- 20.9"	- 40.4"	- 68.9"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.5"	- 16.8"	- 35.2"	- 62.6"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.7"	0.0"	- 9.3"	- 25.9"	- 51.5"
TRAJ: 400 yd. zero	- 1.5"	5.2"	8.4"	7.0"	0.0"	- 14.1"	- 37.4"
TRAJ: 500 yd. zero	- 1.5"	8.1"	14.1"	15.6"	11.4"	0.0"	- 20.4"
TRAJ: 600 yd. zero	- 1.5"	11.5"	20.9"	25.8"	25.0"	17.0"	0.0"
VELOCITY (fps)	3400	3054	2728	2423	2143	1887	1655
ENERGY (ft. lbs.)	1926	1553	1240	978	765	593	456
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.3"	- 22.3"	- 43.2"	- 74.1"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.8"	- 17.6"	- 37.4"	- 67.1"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.9"	0.0"	- 9.8"	- 27.6"	- 55.4"
TRAJ: 400 yd. zero	- 1.5"	5.6"	8.8"	7.4"	0.0"	- 15.3"	- 40.6"
TRAJ: 500 yd. zero	- 1.5"	8.7"	15.0"	16.6"	12.3"	0.0"	- 22.2"
TRAJ: 600 yd. zero	- 1.5"	12.4"	22.4"	27.7"	27.1"	18.5"	0.0"
VELOCITY (fps)	3300	2960	2639	2342	2069	1819	1595
ENERGY (ft. lbs.)	1814	1459	1160	914	713	551	424
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 10.2"	- 24.3"	- 46.6"	- 79.4"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.3"	- 19.2"	- 40.1"	- 71.7"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.3"	0.0"	- 10.6"	- 29.4"	- 58.9"
TRAJ: 400 yd. zero	- 1.5"	6.1"	9.6"	8.0"	0.0"	- 16.1"	- 42.9"
TRAJ: 500 yd. zero	- 1.5"	9.3"	16.0"	17.7"	12.9"	0.0"	- 23.5"
TRAJ: 600 yd. zero	- 1.5"	13.2"	23.9"	29.5"	28.6"	19.6"	0.0"
VELOCITY (fps)	3200	2865	2551	2261	1994	1751	1536
ENERGY (ft. lbs.)	1706	1368	1084	851	663	511	393
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 11.1"	- 26.4"	- 50.5"	- 86.6"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.9"	- 20.8"	- 43.6"	- 78.2"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.6"	0.0"	- 11.6"	- 32.0"	- 64.3"
TRAJ: 400 yd. zero	- 1.5"	6.6"	10.4"	8.7"	0.0"	- 17.5"	- 46.9"
TRAJ: 500 yd. zero	- 1.5"	10.1"	17.4"	19.2"	14.0"	0.0"	- 25.9"
TRAJ: 600 yd. zero	- 1.5"	14.4"	26.1"	32.2"	31.3"	21.6"	0.0"
VELOCITY (fps)	3100	2771	2464	2180	1921	1685	1468
ENERGY (ft. lbs.)	1601	1279	1011	792	615	473	359
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.0"	- 28.3"	- 54.6"	- 92.7"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.3"	- 22.1"	- 46.8"	- 83.3"
TRAJ: 300 yd. zero	- 1.5"	4.0"	4.9"	0.0"	- 12.2"	- 34.5"	- 68.5"
TRAJ: 400 yd. zero	- 1.5"	7.1"	11.1"	9.2"	0.0"	- 19.1"	- 50.1"
TRAJ: 500 yd. zero	- 1.5"	10.9"	18.7"	20.7"	15.3"	0.0"	- 27.1"
TRAJ: 600 yd. zero	- 1.5"	15.5"	27.8"	34.3"	33.4"	22.6"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2677	2377	2101	1848	1621	1412
ENERGY (ft. lbs.)	1499	1194	941	735	569	438	332
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.3"	- 31.1"	- 59.4"	- 100.8"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.0"	- 24.1"	- 50.7"	- 80.3"
TRAJ: 300 yd. zero	- 1.5"	4.5"	5.4"	0.0"	- 13.3"	- 37.2"	- 74.1"
TRAJ: 400 yd. zero	- 1.5"	7.8"	12.1"	10.0"	0.0"	- 20.4"	- 54.0"
TRAJ: 500 yd. zero	- 1.5"	11.9"	20.3"	22.3"	16.4"	0.0"	- 29.5"
TRAJ: 600 yd. zero	- 1.5"	16.8"	30.1"	37.1"	36.1"	24.6"	0.0"
VELOCITY (fps)	2900	2584	2291	2022	1776	1557	1357
ENERGY (ft. lbs.)	1401	1112	874	681	525	404	307
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.3"	- 33.7"	- 64.2"	- 109.1"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.6"	- 26.1"	- 54.6"	- 97.7"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.8"	0.0"	- 14.6"	- 40.2"	- 80.4"
TRAJ: 400 yd. zero	- 1.5"	8.4"	13.1"	11.0"	0.0"	- 21.9"	- 58.4"
TRAJ: 500 yd. zero	- 1.5"	12.8"	21.9"	24.2"	17.8"	0.0"	- 32.0"
TRAJ: 600 yd. zero	- 1.5"	18.2"	32.6"	40.2"	39.0"	26.7"	0.0"
VELOCITY (fps)	2800	2490	2205	1943	1705	1486	1296
ENERGY (ft. lbs.)	1306	1033	810	629	484	368	280
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.9"	- 36.9"	- 69.7"	- 118.4"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.4"	- 28.3"	- 59.0"	- 105.5"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.3"	0.0"	- 15.6"	- 43.2"	- 86.5"
TRAJ: 400 yd. zero	- 1.5"	9.2"	14.2"	11.8"	0.0"	- 23.6"	- 63.0"
TRAJ: 500 yd. zero	- 1.5"	14.0"	23.6"	25.9"	18.9"	0.0"	- 34.7"
TRAJ: 600 yd. zero	- 1.5"	19.7"	35.2"	43.3"	42.1"	28.9"	0.0"
VELOCITY (fps)	2700	2398	2120	1866	1636	1425	1247
ENERGY (ft. lbs.)	1214	958	749	580	446	338	259
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 17.1"	- 39.7"	- 75.5"	- 128.8"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.1"	- 30.4"	- 63.8"	- 114.7"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.8"	0.0"	- 16.8"	- 46.9"	- 94.4"
TRAJ: 400 yd. zero	- 1.5"	9.9"	15.2"	12.6"	0.0"	- 25.8"	- 69.1"
TRAJ: 500 yd. zero	- 1.5"	15.1"	25.6"	28.2"	20.7"	0.0"	- 38.1"
TRAJ: 600 yd. zero	- 1.5"	21.5"	38.3"	47.2"	46.1"	31.8"	0.0"
VELOCITY (fps)	2600	2306	2036	1789	1568	1366	1202
ENERGY (ft. lbs.)	1126	886	690	533	410	311	241
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.1"	- 44.4"	- 83.5"	- 141.0"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.2"	- 33.9"	- 70.3"	- 125.1"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.5"	0.0"	- 18.9"	- 51.5"	- 102.6"
TRAJ: 400 yd. zero	- 1.5"	11.1"	17.0"	14.2"	0.0"	- 27.9"	- 74.2"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.1"	30.9"	22.3"	0.0"	- 40.7"
TRAJ: 600 yd. zero	- 1.5"	23.5"	41.7"	51.3"	49.5"	34.0"	0.0"

**6 MM (.243" Dia.) 80 GRAIN FULL METAL JACKET**

SECTIONAL DENSITY: .194 BALLISTIC COEFFICIENT: .254

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3088	2704	2350	2030	1743	1483
ENERGY (ft. lbs.)	2177	1694	1299	981	732	540	391
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.2"	- 9.2"	- 22.6"	- 44.6"	- 78.0"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.9"	- 18.2"	- 39.1"	- 71.4"
TRAJ: 300 yd. zero	- 1.5"	3.1"	4.0"	0.0"	- 10.2"	- 29.2"	- 59.5"
TRAJ: 400 yd. zero	- 1.5"	5.7"	9.1"	7.7"	0.0"	- 16.3"	- 44.0"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.7"	17.6"	13.1"	0.0"	- 24.4"
TRAJ: 600 yd. zero	- 1.5"	13.0"	23.8"	29.8"	29.4"	20.3"	0.0"
VELOCITY (fps)	3400	2995	2617	2272	1959	1680	1430
ENERGY (ft. lbs.)	2054	1593	1217	917	682	502	363
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 10.1"	- 24.7"	- 48.3"	- 84.5"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 6.4"	- 19.8"	- 42.2"	- 77.1"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.3"	0.0"	- 11.1"	- 31.4"	- 64.2"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.9"	8.4"	0.0"	- 17.4"	- 47.4"
TRAJ: 500 yd. zero	- 1.5"	9.7"	16.9"	18.9"	14.0"	0.0"	- 26.5"
TRAJ: 600 yd. zero	- 1.5"	14.1"	25.7"	32.1"	31.6"	22.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2901	2531	2194	1889	1619	1378
ENERGY (ft. lbs.)	1935	1496	1138	855	634	466	337
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-11.0"	-26.6"	-52.4"	-91.2"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.9"	-21.0"	-45.5"	-82.9"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.6"	0.0"	-11.8"	-34.0"	-69.1"
TRAJ: 400 yd. zero	-1.5"	6.7"	10.5"	8.9"	0.0"	-19.1"	-51.3"
TRAJ: 500 yd. zero	-1.5"	10.5"	18.2"	20.4"	15.3"	0.0"	-28.3"
TRAJ: 600 yd. zero	-1.5"	15.2"	27.7"	34.6"	34.2"	23.6"	0.0"
VELOCITY (fps)	3200	2808	2445	2116	1820	1559	1328
ENERGY (ft. lbs.)	1819	1401	1063	796	588	432	313
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.8"	-28.8"	-56.5"	-98.3"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.3"	-22.7"	-49.0"	-89.3"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.9"	0.0"	-12.9"	-36.7"	-74.6"
TRAJ: 400 yd. zero	-1.5"	7.2"	11.4"	9.7"	0.0"	-20.5"	-55.1"
TRAJ: 500 yd. zero	-1.5"	11.3"	19.6"	22.1"	16.5"	0.0"	-30.4"
TRAJ: 600 yd. zero	-1.5"	16.4"	29.8"	37.3"	36.8"	25.4"	0.0"
VELOCITY (fps)	3100	2715	2361	2040	1751	1490	1272
ENERGY (ft. lbs.)	1708	1310	990	739	545	395	288
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-13.0"	-31.1"	-60.8"	-106.2"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-8.1"	-24.6"	-52.6"	-96.4"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.4"	0.0"	-13.8"	-39.1"	-80.2"
TRAJ: 400 yd. zero	-1.5"	7.8"	12.3"	10.4"	0.0"	-21.8"	-59.5"
TRAJ: 500 yd. zero	-1.5"	12.2"	21.1"	23.5"	17.5"	0.0"	-33.2"
TRAJ: 600 yd. zero	-1.5"	17.7"	32.2"	40.1"	39.7"	27.7"	0.0"
VELOCITY (fps)	3000	2622	2276	1964	1684	1433	1228
ENERGY (ft. lbs.)	1599	1222	921	685	504	365	268
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-14.2"	-33.8"	-65.9"	-115.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.6"	-26.4"	-56.6"	-103.9"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.8"	0.0"	-14.8"	-42.1"	-86.5"
TRAJ: 400 yd. zero	-1.5"	8.5"	13.2"	11.1"	0.0"	-23.6"	-64.2"
TRAJ: 500 yd. zero	-1.5"	13.2"	22.7"	25.3"	18.9"	0.0"	-35.9"
TRAJ: 600 yd. zero	-1.5"	19.2"	34.6"	43.3"	42.9"	30.0"	0.0"
VELOCITY (fps)	2900	2530	2193	1888	1618	1377	1187
ENERGY (ft. lbs.)	1494	1137	854	634	465	337	250
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-15.4"	-37.0"	-71.8"	-125.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.3"	-28.9"	-61.7"	-113.0"
TRAJ: 300 yd. zero	-1.5"	5.1"	6.2"	0.0"	-16.4"	-46.1"	-94.3"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.5"	12.4"	0.0"	-25.5"	-69.6"
TRAJ: 500 yd. zero	-1.5"	14.4"	24.7"	27.7"	20.4"	0.0"	-38.9"
TRAJ: 600 yd. zero	-1.5"	20.9"	37.7"	47.2"	46.4"	32.5"	0.0"
VELOCITY (fps)	2800	2438	2110	1814	1554	1323	1150
ENERGY (ft. lbs.)	1393	1056	791	584	429	311	235
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-17.0"	-40.0"	-77.9"	-135.3"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.3"	-31.1"	-66.7"	-121.9"
TRAJ: 300 yd. zero	-1.5"	5.7"	6.9"	0.0"	-17.4"	-49.5"	-101.3"
TRAJ: 400 yd. zero	-1.5"	10.0"	15.6"	13.1"	0.0"	-27.7"	-75.2"
TRAJ: 500 yd. zero	-1.5"	15.6"	26.7"	29.7"	22.2"	0.0"	-41.8"
TRAJ: 600 yd. zero	-1.5"	22.8"	40.7"	50.7"	50.2"	34.9"	0.0"
VELOCITY (fps)	2700	2347	2027	1740	1481	1265	1107
ENERGY (ft. lbs.)	1295	979	730	538	390	284	218
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-18.5"	-43.6"	-84.8"	-146.1"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-11.1"	-33.8"	-72.6"	-131.4"
TRAJ: 300 yd. zero	-1.5"	6.2"	7.4"	0.0"	-18.9"	-53.9"	-109.1"
TRAJ: 400 yd. zero	-1.5"	10.9"	16.9"	14.2"	0.0"	-30.2"	-80.6"
TRAJ: 500 yd. zero	-1.5"	17.0"	29.0"	32.4"	24.2"	0.0"	-44.3"
TRAJ: 600 yd. zero	-1.5"	24.4"	43.8"	54.6"	53.8"	37.0"	0.0"
VELOCITY (fps)	2600	2256	1945	1668	1420	1217	1077
ENERGY (ft. lbs.)	1201	904	672	494	358	263	206
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-20.5"	-48.1"	-92.7"	-159.7"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.1"	-37.0"	-78.8"	-143.0"
TRAJ: 300 yd. zero	-1.5"	6.8"	8.1"	0.0"	-20.7"	-58.5"	-118.6"
TRAJ: 400 yd. zero	-1.5"	12.0"	18.5"	15.6"	0.0"	-32.6"	-87.5"
TRAJ: 500 yd. zero	-1.5"	18.6"	31.6"	35.2"	26.1"	0.0"	-48.3"
TRAJ: 600 yd. zero	-1.5"	26.6"	47.7"	59.3"	58.3"	40.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2166	1884	1597	1359	1175	1049
ENERGY (ft. lbs.)	1111	833	617	453	328	245	196
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.1"	-22.5"	-52.8"	-101.5"	-173.6"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-13.3"	-40.8"	-86.1"	-155.2"
TRAJ: 300 yd. zero	-1.5"	7.5"	8.9"	0.0"	-22.7"	-63.8"	-128.4"
TRAJ: 400 yd. zero	-1.5"	13.2"	20.3"	17.1"	0.0"	-35.4"	-94.2"
TRAJ: 500 yd. zero	-1.5"	20.3"	34.5"	38.3"	28.3"	0.0"	-51.7"
TRAJ: 600 yd. zero	-1.5"	28.9"	51.7"	64.2"	62.9"	43.2"	0.0"
VELOCITY (fps)	2400	2075	1783	1528	1302	1136	1023
ENERGY (ft. lbs.)	1023	765	565	415	301	229	186
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.7"	-24.9"	-58.2"	-111.8"	-189.5"
TRAJ: 200 yd. zero	-1.5"	3.4"	0.0"	-14.8"	-44.6"	-94.8"	-169.2"
TRAJ: 300 yd. zero	-1.5"	8.3"	9.9"	0.0"	-24.9"	-70.1"	-139.5"
TRAJ: 400 yd. zero	-1.5"	14.6"	22.3"	18.7"	0.0"	-39.0"	-102.2"
TRAJ: 500 yd. zero	-1.5"	22.4"	38.0"	42.1"	31.2"	0.0"	-55.3"
TRAJ: 600 yd. zero	-1.5"	31.6"	56.4"	69.8"	68.1"	46.1"	0.0"
VELOCITY (fps)	2300	1985	1703	1449	1240	1092	992
ENERGY (ft. lbs.)	940	700	515	373	273	212	175
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.5"	-27.3"	-63.7"	-121.6"	-204.8"
TRAJ: 200 yd. zero	-1.5"	3.8"	0.0"	-15.9"	-48.5"	-102.6"	-182.1"
TRAJ: 300 yd. zero	-1.5"	9.1"	10.7"	0.0"	-27.2"	-76.0"	-150.1"
TRAJ: 400 yd. zero	-1.5"	15.9"	24.3"	20.5"	0.0"	-41.9"	-109.2"
TRAJ: 500 yd. zero	-1.5"	24.3"	41.1"	45.6"	33.5"	0.0"	-58.9"
TRAJ: 600 yd. zero	-1.5"	34.1"	60.7"	75.1"	72.8"	49.1"	0.0"
VELOCITY (fps)	2200	1895	1624	1382	1190	1060	968
ENERGY (ft. lbs.)	860	638	469	339	252	200	167
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.5"	-30.3"	-70.5"	-133.6"	-224.7"
TRAJ: 200 yd. zero	-1.5"	4.3"	0.0"	-17.5"	-53.4"	-112.2"	-199.1"
TRAJ: 300 yd. zero	-1.5"	10.1"	11.7"	0.0"	-30.0"	-83.0"	-164.0"
TRAJ: 400 yd. zero	-1.5"	17.6"	26.7"	22.5"	0.0"	-45.5"	-119.0"
TRAJ: 500 yd. zero	-1.5"	26.7"	44.9"	49.8"	36.4"	0.0"	-64.3"
TRAJ: 600 yd. zero	-1.5"	37.5"	66.4"	82.0"	79.3"	53.6"	0.0"

**6 MM (.243" Dia.) 87 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .210 BALLISTIC COEFFICIENT: .355

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3107	2828	2564	2317	2087	1874
ENERGY (ft. lbs.)	2234	1865	1546	1271	1038	842	679
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.7"	-20.7"	-39.1"	-65.7"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.4"	-16.4"	-33.7"	-59.2"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.7"	0.0"	-9.1"	-24.6"	-48.3"
TRAJ: 400 yd. zero	-1.5"	5.2"	8.2"	6.8"	0.0"	-13.2"	-34.6"
TRAJ: 500 yd. zero	-1.5"	7.8"	13.5"	14.8"	10.6"	0.0"	-18.7"
TRAJ: 600 yd. zero	-1.5"	11.0"	19.8"	24.2"	23.1"	15.7"	0.0"
VELOCITY (fps)	3300	3012	2738	2479	2238	2014	1806
ENERGY (ft. lbs.)	2104	1753	1449	1188	968	784	630
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.4"	-22.4"	-42.3"	-71.0"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.9"	-17.6"	-36.3"	-63.8"
TRAJ: 300 yd. zero	-1.5"	3.2"	3.9"	0.0"	-9.8"	-26.5"	-52.0"
TRAJ: 400 yd. zero	-1.5"	5.6"	8.8"	7.4"	0.0"	-14.2"	-37.3"
TRAJ: 500 yd. zero	-1.5"	8.5"	14.5"	15.9"	11.4"	0.0"	-20.2"
TRAJ: 600 yd. zero	-1.5"	11.8"	21.3"	26.0"	24.9"	16.8"	0.0"
VELOCITY (fps)	3200	2917	2648	2395	2160	1941	1739
ENERGY (ft. lbs.)	1979	1644	1355	1109	901	728	584
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.3"	-24.4"	-45.8"	-76.9"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.3"	-19.1"	-39.2"	-69.0"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.3"	0.0"	-10.6"	-28.6"	-56.2"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.6"	8.0"	0.0"	-15.3"	-40.3"
TRAJ: 500 yd. zero	-1.5"	9.2"	15.7"	17.2"	12.3"	0.0"	-21.8"
TRAJ: 600 yd. zero	-1.5"	12.8"	23.0"	28.1"	26.9"	18.2"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2822	2558	2311	2082	1869	1674
ENERGY (ft. lbs.)	1857	1539	1265	1032	838	675	541
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.3"	-26.2"	-49.4"	-83.1"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.9"	-20.3"	-42.0"	-74.3"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.6"	0.0"	-11.1"	-30.5"	-60.4"
TRAJ: 400 yd. zero	-1.5"	6.6"	10.2"	8.3"	0.0"	-16.5"	-43.7"
TRAJ: 500 yd. zero	-1.5"	9.9"	16.8"	18.3"	13.3"	0.0"	-23.8"
TRAJ: 600 yd. zero	-1.5"	13.9"	24.8"	30.2"	29.2"	19.9"	0.0"
VELOCITY (fps)	3000	2727	2469	2228	2005	1798	1609
ENERGY (ft. lbs.)	1739	1437	1178	960	777	624	500
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.4"	-28.6"	-53.8"	-89.8"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.5"	-22.1"	-45.7"	-80.0"
TRAJ: 300 yd. zero	-1.5"	4.2"	5.0"	0.0"	-12.0"	-33.0"	-64.9"
TRAJ: 400 yd. zero	-1.5"	7.2"	11.1"	9.1"	0.0"	-17.9"	-46.8"
TRAJ: 500 yd. zero	-1.5"	10.8"	18.3"	19.9"	14.4"	0.0"	-25.2"
TRAJ: 600 yd. zero	-1.5"	15.0"	26.7"	32.5"	31.2"	21.0"	0.0"
VELOCITY (fps)	2900	2632	2380	2146	1928	1727	1547
ENERGY (ft. lbs.)	1825	1339	1095	890	719	577	462
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.4"	-31.0"	-58.5"	-98.0"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.9"	-23.7"	-49.3"	-87.0"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.3"	0.0"	-13.1"	-36.0"	-71.0"
TRAJ: 400 yd. zero	-1.5"	7.8"	11.9"	9.8"	0.0"	-19.6"	-51.3"
TRAJ: 500 yd. zero	-1.5"	11.7"	19.7"	21.6"	15.7"	0.0"	-27.8"
TRAJ: 600 yd. zero	-1.5"	16.3"	29.0"	35.5"	34.2"	23.2"	0.0"
VELOCITY (fps)	2800	2538	2292	2064	1852	1659	1475
ENERGY (ft. lbs.)	1515	1244	1015	823	663	532	421
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-14.8"	-34.1"	-63.5"	-105.7"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.7"	-25.9"	-53.3"	-93.4"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.8"	0.0"	-14.3"	-38.7"	-75.9"
TRAJ: 400 yd. zero	-1.5"	8.5"	13.0"	10.7"	0.0"	-20.8"	-54.5"
TRAJ: 500 yd. zero	-1.5"	12.7"	21.3"	23.2"	16.7"	0.0"	-29.5"
TRAJ: 600 yd. zero	-1.5"	17.6"	31.2"	36.0"	36.3"	24.6"	0.0"
VELOCITY (fps)	2700	2444	2205	1983	1777	1591	1415
ENERGY (ft. lbs.)	1409	1154	939	760	610	489	387
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.2"	-37.2"	-69.7"	-115.7"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.6"	-28.4"	-58.7"	-102.4"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.4"	0.0"	-15.6"	-42.6"	-83.2"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.2"	11.7"	0.0"	-23.1"	-59.7"
TRAJ: 500 yd. zero	-1.5"	13.9"	23.5"	25.6"	18.5"	0.0"	-32.0"
TRAJ: 600 yd. zero	-1.5"	19.3"	34.2"	41.6"	39.9"	26.7"	0.0"
VELOCITY (fps)	2600	2350	2118	1903	1704	1526	1357
ENERGY (ft. lbs.)	1306	1067	867	699	561	450	356
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-17.9"	-40.6"	-75.5"	-125.3"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-10.5"	-30.7"	-63.1"	-110.5"
TRAJ: 300 yd. zero	-1.5"	6.0"	7.0"	0.0"	-16.6"	-45.5"	-89.3"
TRAJ: 400 yd. zero	-1.5"	10.2"	15.4"	12.5"	0.0"	-24.6"	-64.3"
TRAJ: 500 yd. zero	-1.5"	15.1"	25.3"	27.3"	19.8"	0.0"	-34.7"
TRAJ: 600 yd. zero	-1.5"	20.9"	36.8"	44.7"	42.9"	29.0"	0.0"
VELOCITY (fps)	2500	2257	2032	1822	1632	1451	1293
ENERGY (ft. lbs.)	1208	985	798	642	514	407	323
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-19.6"	-44.7"	-83.0"	-138.0"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.2"	-33.6"	-69.0"	-121.3"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.5"	0.0"	-18.5"	-50.3"	-98.7"
TRAJ: 400 yd. zero	-1.5"	11.2"	16.8"	13.9"	0.0"	-27.0"	-70.8"
TRAJ: 500 yd. zero	-1.5"	16.6"	27.6"	30.2"	21.6"	0.0"	-38.4"
TRAJ: 600 yd. zero	-1.5"	23.0"	40.4"	49.4"	47.3"	32.0"	0.0"

# 6 MM (.243" Dia.) 87 GRAIN BOAT TAIL HOLLOW POINT

SECTIONAL DENSITY: .210 BALLISTIC COEFFICIENT: .363

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3304	3022	2753	2499	2262	2041
ENERGY (ft. lbs.)	2504	2109	1764	1465	1207	989	805
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.3"	-17.8"	-33.6"	-56.6"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-4.7"	-14.1"	-29.2"	-51.4"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.2"	0.0"	-7.7"	-21.3"	-41.9"
TRAJ: 400 yd. zero	-1.5"	4.4"	7.1"	5.8"	0.0"	-11.5"	-30.2"
TRAJ: 500 yd. zero	-1.5"	6.7"	11.7"	12.8"	9.3"	0.0"	-16.3"
TRAJ: 600 yd. zero	-1.5"	9.4"	17.1"	21.0"	20.2"	13.6"	0.0"
VELOCITY (fps)	3500	3209	2931	2667	2419	2187	1971
ENERGY (ft. lbs.)	2367	1989	1660	1375	1130	924	750
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-7.9"	-18.9"	-36.1"	-60.9"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.0"	-15.0"	-31.2"	-55.0"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.4"	0.0"	-8.3"	-22.8"	-44.9"
TRAJ: 400 yd. zero	-1.5"	4.7"	7.5"	6.3"	0.0"	-12.4"	-32.4"
TRAJ: 500 yd. zero	-1.5"	7.2"	12.5"	13.7"	9.9"	0.0"	-17.5"
TRAJ: 600 yd. zero	-1.5"	10.2"	18.4"	22.5"	21.6"	14.6"	0.0"
VELOCITY (fps)	3400	3113	2840	2581	2338	2112	1901
ENERGY (ft. lbs.)	2234	1873	1559	1288	1057	862	699
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.6"	-20.5"	-38.9"	-65.5"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.4"	-16.2"	-33.5"	-59.1"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.6"	0.0"	-8.9"	-24.5"	-48.2"
TRAJ: 400 yd. zero	-1.5"	5.1"	8.1"	6.7"	0.0"	-13.3"	-34.8"
TRAJ: 500 yd. zero	-1.5"	7.8"	13.4"	14.7"	10.7"	0.0"	-18.8"
TRAJ: 600 yd. zero	-1.5"	10.9"	19.7"	24.1"	23.2"	15.7"	0.0"
VELOCITY (fps)	3300	3018	2750	2496	2259	2038	1833
ENERGY (ft. lbs.)	2104	1760	1461	1204	986	802	649
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.4"	-22.2"	-42.1"	-70.7"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.8"	-17.4"	-36.1"	-63.6"
TRAJ: 300 yd. zero	-1.5"	3.1"	3.9"	0.0"	-9.6"	-26.4"	-51.9"
TRAJ: 400 yd. zero	-1.5"	5.6"	8.7"	7.2"	0.0"	-14.3"	-37.4"
TRAJ: 500 yd. zero	-1.5"	8.4"	14.5"	15.9"	11.5"	0.0"	-20.2"
TRAJ: 600 yd. zero	-1.5"	11.8"	21.2"	26.0"	25.0"	16.9"	0.0"
VELOCITY (fps)	3200	2923	2660	2411	2180	1964	1765
ENERGY (ft. lbs.)	1979	1651	1367	1124	918	746	602
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.2"	-24.1"	-45.6"	-75.8"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.3"	-18.8"	-39.0"	-67.9"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.2"	0.0"	-10.4"	-28.5"	-55.2"
TRAJ: 400 yd. zero	-1.5"	6.0"	9.4"	7.8"	0.0"	-15.4"	-39.6"
TRAJ: 500 yd. zero	-1.5"	9.1"	15.6"	17.1"	12.4"	0.0"	-21.0"
TRAJ: 600 yd. zero	-1.5"	12.6"	22.6"	27.6"	26.4"	17.6"	0.0"
VELOCITY (fps)	3100	2828	2569	2327	2102	1892	1698
ENERGY (ft. lbs.)	1857	1545	1276	1047	853	691	557
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.2"	-26.2"	-49.0"	-81.7"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.8"	-20.4"	-41.7"	-72.9"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.8"	0.0"	-11.2"	-30.2"	-59.1"
TRAJ: 400 yd. zero	-1.5"	6.6"	10.2"	8.5"	0.0"	-16.1"	-42.2"
TRAJ: 500 yd. zero	-1.5"	9.8"	16.7"	18.2"	12.9"	0.0"	-22.8"
TRAJ: 600 yd. zero	-1.5"	13.6"	24.3"	29.6"	28.2"	19.1"	0.0"
VELOCITY (fps)	3000	2733	2480	2244	2024	1820	1633
ENERGY (ft. lbs.)	1739	1443	1188	973	791	640	515
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.3"	-28.3"	-52.8"	-88.4"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.4"	-21.8"	-44.7"	-78.7"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.0"	0.0"	-11.8"	-32.2"	-63.7"
TRAJ: 400 yd. zero	-1.5"	7.1"	10.9"	8.9"	0.0"	-17.4"	-46.0"
TRAJ: 500 yd. zero	-1.5"	10.6"	17.9"	19.4"	14.0"	0.0"	-25.0"
TRAJ: 600 yd. zero	-1.5"	14.7"	26.2"	31.9"	30.7"	20.9"	0.0"
VELOCITY (fps)	2900	2638	2391	2161	1947	1749	1569
ENERGY (ft. lbs.)	1625	1345	1105	902	732	591	476
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-13.6"	-30.9"	-57.7"	-95.8"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.1"	-23.7"	-48.6"	-84.9"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-12.8"	-35.0"	-68.6"
TRAJ: 400 yd. zero	-1.5"	7.7"	11.9"	9.6"	0.0"	-19.0"	-49.3"
TRAJ: 500 yd. zero	-1.5"	11.6"	19.5"	21.1"	15.2"	0.0"	-26.5"
TRAJ: 600 yd. zero	-1.5"	16.0"	28.3"	34.3"	32.9"	22.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2543	2303	2079	1871	1679	1497
ENERGY (ft. lbs.)	1515	1250	1025	835	676	545	433
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.0"	- 14.7"	- 33.6"	- 62.9"	- 104.2"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.6"	- 25.4"	- 52.7"	- 92.0"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.8"	0.0"	- 13.9"	- 38.3"	- 74.7"
TRAJ: 400 yd. zero	- 1.5"	8.4"	12.7"	10.5"	0.0"	- 20.8"	- 53.7"
TRAJ: 500 yd. zero	- 1.5"	12.6"	21.1"	23.0"	16.7"	0.0"	- 28.6"
TRAJ: 600 yd. zero	- 1.5"	17.4"	30.7"	37.4"	35.8"	23.9"	0.0"
VELOCITY (fps)	2700	2449	2215	1997	1795	1611	1436
ENERGY (ft. lbs.)	1409	1159	948	771	623	501	399
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 16.0"	- 36.6"	- 68.0"	- 112.7"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 9.4"	- 27.8"	- 57.1"	- 99.6"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.3"	0.0"	- 15.2"	- 41.3"	- 80.6"
TRAJ: 400 yd. zero	- 1.5"	9.2"	13.9"	11.5"	0.0"	- 22.2"	- 57.7"
TRAJ: 500 yd. zero	- 1.5"	13.6"	22.8"	24.8"	17.8"	0.0"	- 31.0"
TRAJ: 600 yd. zero	- 1.5"	18.8"	33.2"	40.3"	38.5"	25.9"	0.0"
VELOCITY (fps)	2600	2356	2128	1916	1721	1544	1377
ENERGY (ft. lbs.)	1306	1072	875	710	572	461	366
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 17.7"	- 40.5"	- 75.3"	- 124.9"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 10.3"	- 30.6"	- 63.1"	- 110.2"
TRAJ: 300 yd. zero	- 1.5"	5.9"	6.9"	0.0"	- 16.8"	- 45.7"	- 89.4"
TRAJ: 400 yd. zero	- 1.5"	10.1"	15.3"	12.8"	0.0"	- 24.7"	- 64.1"
TRAJ: 500 yd. zero	- 1.5"	15.1"	25.2"	27.5"	19.8"	0.0"	- 34.5"
TRAJ: 600 yd. zero	- 1.5"	20.8"	36.7"	44.7"	42.8"	28.8"	0.0"
VELOCITY (fps)	2500	2262	2041	1836	1648	1469	1311
ENERGY (ft. lbs.)	1208	989	805	651	525	417	332
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.5"	- 19.7"	- 44.3"	- 81.9"	- 136.1"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 11.4"	- 33.3"	- 68.1"	- 119.6"
TRAJ: 300 yd. zero	- 1.5"	6.6"	7.6"	0.0"	- 18.0"	- 49.0"	- 96.6"
TRAJ: 400 yd. zero	- 1.5"	11.1"	16.7"	13.5"	0.0"	- 26.4"	- 69.5"
TRAJ: 500 yd. zero	- 1.5"	16.4"	27.3"	29.4"	21.2"	0.0"	- 37.8"
TRAJ: 600 yd. zero	- 1.5"	22.7"	39.9"	48.3"	46.4"	31.5"	0.0"

### 6 MM (.243" Dia.) 100 GRAIN SPIRE POINT

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .357

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3109	2832	2569	2323	2094	1881
ENERGY (ft. lbs.)	2568	2146	1781	1466	1198	974	786
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.7"	- 20.8"	- 39.3"	- 65.9"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.5"	- 16.4"	- 33.8"	- 59.4"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.7"	0.0"	- 9.1"	- 24.7"	- 48.4"
TRAJ: 400 yd. zero	- 1.5"	5.2"	8.2"	6.9"	0.0"	- 13.2"	- 34.7"
TRAJ: 500 yd. zero	- 1.5"	7.9"	13.6"	14.8"	10.6"	0.0"	- 18.7"
TRAJ: 600 yd. zero	- 1.5"	11.0"	19.8"	24.2"	23.1"	15.7"	0.0"
VELOCITY (fps)	3300	3013	2741	2484	2243	2020	1813
ENERGY (ft. lbs.)	2419	2017	1669	1370	1118	906	730
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.5"	- 22.6"	- 42.5"	- 71.2"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.9"	- 17.7"	- 36.5"	- 64.0"
TRAJ: 300 yd. zero	- 1.5"	3.2"	4.0"	0.0"	- 9.8"	- 26.6"	- 52.1"
TRAJ: 400 yd. zero	- 1.5"	5.7"	8.9"	7.4"	0.0"	- 14.2"	- 37.3"
TRAJ: 500 yd. zero	- 1.5"	8.5"	14.6"	16.0"	11.4"	0.0"	- 20.2"
TRAJ: 600 yd. zero	- 1.5"	11.9"	21.3"	26.1"	24.9"	16.9"	0.0"
VELOCITY (fps)	3200	2918	2651	2399	2165	1947	1746
ENERGY (ft. lbs.)	2274	1892	1561	1279	1041	842	677
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.4"	- 24.2"	- 45.6"	- 76.6"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.4"	- 18.8"	- 39.0"	- 68.6"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.3"	0.0"	- 10.3"	- 28.2"	- 55.8"
TRAJ: 400 yd. zero	- 1.5"	6.1"	9.4"	7.7"	0.0"	- 15.3"	- 40.3"
TRAJ: 500 yd. zero	- 1.5"	9.1"	15.6"	17.0"	12.3"	0.0"	- 21.8"
TRAJ: 600 yd. zero	- 1.5"	12.8"	22.9"	27.9"	26.9"	18.2"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2823	2561	2315	2087	1875	1680
ENERGY (ft. lbs.)	2134	1770	1457	1191	967	781	627
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.4"	-26.4"	-49.6"	-82.5"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.9"	-20.4"	-42.2"	-73.6"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.1"	-30.5"	-59.6"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.2"	8.4"	0.0"	-16.6"	-42.9"
TRAJ: 500 yd. zero	-1.5"	9.9"	16.9"	18.4"	13.3"	0.0"	-22.9"
TRAJ: 600 yd. zero	-1.5"	13.8"	24.6"	29.8"	28.6"	19.1"	0.0"
VELOCITY (fps)	3000	2728	2472	2232	2010	1803	1615
ENERGY (ft. lbs.)	1999	1653	1357	1107	897	722	580
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.3"	-28.5"	-53.8"	-89.6"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.3"	-21.9"	-45.4"	-79.7"
TRAJ: 300 yd. zero	-1.5"	4.1"	4.9"	0.0"	-12.1"	-33.1"	-64.9"
TRAJ: 400 yd. zero	-1.5"	7.1"	11.0"	9.1"	0.0"	-18.0"	-46.8"
TRAJ: 500 yd. zero	-1.5"	10.7"	18.2"	19.9"	14.4"	0.0"	-25.1"
TRAJ: 600 yd. zero	-1.5"	14.9"	26.6"	32.5"	31.2"	21.0"	0.0"
VELOCITY (fps)	2900	2634	2383	2150	1933	1733	1552
ENERGY (ft. lbs.)	1868	1540	1261	1026	830	667	535
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.5"	-31.2"	-58.7"	-98.2"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.0"	-23.8"	-49.5"	-87.2"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-13.1"	-36.1"	-71.1"
TRAJ: 400 yd. zero	-1.5"	7.8"	11.9"	9.9"	0.0"	-19.6"	-51.3"
TRAJ: 500 yd. zero	-1.5"	11.8"	19.8"	21.7"	15.7"	0.0"	-27.7"
TRAJ: 600 yd. zero	-1.5"	16.4"	29.1"	35.6"	34.3"	23.2"	0.0"
VELOCITY (fps)	2800	2539	2295	2068	1857	1664	1481
ENERGY (ft. lbs.)	1741	1432	1170	950	766	615	487
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-14.7"	-34.0"	-63.3"	-105.5"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.7"	-26.0"	-53.4"	-93.6"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.9"	0.0"	-14.3"	-38.7"	-76.0"
TRAJ: 400 yd. zero	-1.5"	8.5"	13.0"	10.8"	0.0"	-20.8"	-54.4"
TRAJ: 500 yd. zero	-1.5"	12.7"	21.4"	23.3"	16.7"	0.0"	-29.4"
TRAJ: 600 yd. zero	-1.5"	17.6"	31.2"	38.0"	36.3"	24.6"	0.0"
VELOCITY (fps)	2700	2445	2208	1987	1782	1596	1421
ENERGY (ft. lbs.)	1619	1328	1082	877	705	566	448
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.3"	-36.9"	-69.2"	-115.0"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.6"	-28.0"	-58.1"	-101.6"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.4"	0.0"	-15.1"	-42.0"	-82.3"
TRAJ: 400 yd. zero	-1.5"	9.2"	14.0"	11.4"	0.0"	-23.1"	-59.6"
TRAJ: 500 yd. zero	-1.5"	13.8"	23.2"	25.2"	18.5"	0.0"	-31.9"
TRAJ: 600 yd. zero	-1.5"	19.2"	33.9"	41.2"	39.8"	26.6"	0.0"

### 6 MM (.243" Dia.) 100 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .400

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3139	2890	2652	2426	2215	2016
ENERGY (ft. lbs.)	2568	2189	1855	1562	1308	1089	903
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.3"	-19.8"	-37.4"	-62.0"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.2"	-15.7"	-32.2"	-55.8"
TRAJ: 300 yd. zero	-1.5"	2.8"	3.5"	0.0"	-8.7"	-23.4"	-45.3"
TRAJ: 400 yd. zero	-1.5"	5.0"	7.9"	6.5"	0.0"	-12.5"	-32.2"
TRAJ: 500 yd. zero	-1.5"	7.5"	12.9"	14.1"	10.1"	0.0"	-17.1"
TRAJ: 600 yd. zero	-1.5"	10.3"	18.6"	22.7"	21.5"	14.3"	0.0"
VELOCITY (fps)	3300	3044	2799	2565	2345	2138	1945
ENERGY (ft. lbs.)	2419	2057	1739	1461	1221	1015	840
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.2"	-21.6"	-40.6"	-67.1"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.6"	-16.9"	-34.6"	-59.9"
TRAJ: 300 yd. zero	-1.5"	3.1"	3.8"	0.0"	-9.3"	-25.1"	-48.6"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.5"	7.0"	0.0"	-13.4"	-34.5"
TRAJ: 500 yd. zero	-1.5"	8.1"	13.9"	15.1"	10.8"	0.0"	-18.3"
TRAJ: 600 yd. zero	-1.5"	11.2"	20.0"	24.3"	23.0"	15.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2948	2707	2479	2264	2062	1874
ENERGY (ft. lbs.)	2274	1930	1628	1364	1138	944	780
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.0"	-23.1"	-43.3"	-71.7"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.0"	-17.8"	-36.8"	-63.8"
TRAJ: 300 yd. zero	-1.5"	3.3"	4.1"	0.0"	-9.7"	-26.6"	-51.8"
TRAJ: 400 yd. zero	-1.5"	5.8"	8.9"	7.3"	0.0"	-14.4"	-37.0"
TRAJ: 500 yd. zero	-1.5"	8.7"	14.7"	16.0"	11.8"	0.0"	-19.7"
TRAJ: 600 yd. zero	-1.5"	12.0"	21.3"	25.8"	24.7"	16.4"	0.0"
VELOCITY (fps)	3100	2852	2616	2393	2183	1987	1803
ENERGY (ft. lbs.)	2134	1807	1520	1272	1059	877	722
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-10.9"	-25.0"	-46.9"	-77.5"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.5"	-19.2"	-39.6"	-68.8"
TRAJ: 300 yd. zero	-1.5"	3.6"	4.4"	0.0"	-10.4"	-28.6"	-55.6"
TRAJ: 400 yd. zero	-1.5"	6.3"	9.6"	7.9"	0.0"	-15.5"	-39.9"
TRAJ: 500 yd. zero	-1.5"	9.4"	15.9"	17.2"	12.5"	0.0"	-21.2"
TRAJ: 600 yd. zero	-1.5"	12.9"	22.9"	27.8"	26.6"	17.7"	0.0"
VELOCITY (fps)	3000	2757	2525	2308	2103	1912	1734
ENERGY (ft. lbs.)	1999	1688	1417	1183	983	812	668
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-11.9"	-27.2"	-50.9"	-84.0"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.1"	-20.8"	-42.9"	-74.4"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.8"	0.0"	-11.3"	-30.9"	-60.1"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.4"	8.5"	0.0"	-18.8"	-43.1"
TRAJ: 500 yd. zero	-1.5"	10.2"	17.2"	18.6"	13.5"	0.0"	-22.9"
TRAJ: 600 yd. zero	-1.5"	14.0"	24.8"	30.1"	28.8"	19.1"	0.0"
VELOCITY (fps)	2900	2662	2435	2223	2024	1838	1666
ENERGY (ft. lbs.)	1868	1573	1317	1098	910	750	617
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-13.1"	-29.7"	-55.4"	-91.5"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.7"	-22.8"	-46.4"	-80.8"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.2"	0.0"	-12.2"	-33.5"	-65.3"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.3"	9.2"	0.0"	-18.1"	-46.9"
TRAJ: 500 yd. zero	-1.5"	11.1"	18.6"	20.1"	14.6"	0.0"	-25.0"
TRAJ: 600 yd. zero	-1.5"	15.3"	27.0"	32.7"	31.3"	20.9"	0.0"
VELOCITY (fps)	2800	2566	2346	2139	1946	1765	1600
ENERGY (ft. lbs.)	1741	1483	1222	1016	841	692	569
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-14.4"	-32.5"	-60.5"	-100.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.4"	-24.6"	-50.5"	-88.2"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.7"	0.0"	-13.3"	-36.4"	-71.3"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.3"	10.0"	0.0"	-19.7"	-51.3"
TRAJ: 500 yd. zero	-1.5"	12.1"	20.2"	21.9"	15.8"	0.0"	-27.6"
TRAJ: 600 yd. zero	-1.5"	16.7"	29.4"	35.7"	34.2"	23.0"	0.0"
VELOCITY (fps)	2700	2472	2257	2056	1868	1693	1535
ENERGY (ft. lbs.)	1619	1357	1132	939	775	637	523
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.2"	-15.6"	-35.3"	-64.9"	-107.0"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.2"	-26.8"	-54.3"	-94.3"
TRAJ: 300 yd. zero	-1.5"	5.2"	6.2"	0.0"	-14.4"	-38.9"	-75.7"
TRAJ: 400 yd. zero	-1.5"	8.8"	13.4"	10.9"	0.0"	-20.8"	-54.0"
TRAJ: 500 yd. zero	-1.5"	13.0"	21.7"	23.3"	16.6"	0.0"	-29.1"
TRAJ: 600 yd. zero	-1.5"	17.8"	31.4"	37.9"	36.1"	24.3"	0.0"

**6 MM (.243" Dia.) 100 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .216

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	2926	2492	2103	1759	1457	1216
ENERGY (ft. lbs.)	2568	1902	1379	982	687	471	329
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.9"	-27.2"	-54.7"	-98.7"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-7.0"	-22.0"	-48.2"	-90.9"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.7"	0.0"	-12.6"	-36.5"	-76.8"
TRAJ: 400 yd. zero	-1.5"	6.8"	11.0"	9.5"	0.0"	-20.7"	-57.8"
TRAJ: 500 yd. zero	-1.5"	11.0"	19.3"	21.9"	16.6"	0.0"	-33.0"
TRAJ: 600 yd. zero	-1.5"	16.5"	30.3"	38.4"	38.6"	27.5"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2834	2408	2029	1695	1404	1180
ENERGY (ft. lbs.)	2419	1784	1288	914	638	438	309
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.9"	-29.5"	-59.3"	-106.4"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.5"	-23.6"	-51.9"	-97.5"
TRAJ: 300 yd. zero	-1.5"	4.0"	5.0"	0.0"	-13.5"	-39.3"	-82.4"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.8"	10.2"	0.0"	-22.3"	-62.0"
TRAJ: 500 yd. zero	-1.5"	11.9"	20.8"	23.6"	17.9"	0.0"	-35.1"
TRAJ: 600 yd. zero	-1.5"	17.7"	32.5"	41.2"	41.4"	29.3"	0.0"
VELOCITY (fps)	3200	2742	2326	1956	1632	1352	1146
ENERGY (ft. lbs.)	2274	1670	1202	850	592	406	292
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-13.1"	-32.2"	-64.5"	-115.5"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-8.2"	-25.7"	-56.4"	-105.7"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.5"	0.0"	-14.6"	-42.6"	-89.2"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.9"	11.0"	0.0"	-24.2"	-67.2"
TRAJ: 500 yd. zero	-1.5"	12.9"	22.6"	25.6"	19.4"	0.0"	-38.0"
TRAJ: 600 yd. zero	-1.5"	19.3"	35.3"	44.6"	44.8"	31.7"	0.0"
VELOCITY (fps)	3100	2650	2244	1883	1571	1303	1111
ENERGY (ft. lbs.)	2134	1560	1118	788	548	377	274
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-14.3"	-34.9"	-69.9"	-124.1"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.9"	-27.8"	-60.9"	-113.3"
TRAJ: 300 yd. zero	-1.5"	4.8"	6.0"	0.0"	-15.9"	-46.0"	-95.5"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.9"	11.9"	0.0"	-26.1"	-71.6"
TRAJ: 500 yd. zero	-1.5"	14.0"	24.4"	27.6"	20.9"	0.0"	-40.2"
TRAJ: 600 yd. zero	-1.5"	20.7"	37.8"	47.8"	47.8"	33.6"	0.0"
VELOCITY (fps)	3000	2559	2163	1811	1501	1249	1079
ENERGY (ft. lbs.)	1999	1454	1039	729	500	346	259
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-15.5"	-37.9"	-75.6"	-133.7"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.6"	-29.9"	-65.7"	-121.9"
TRAJ: 300 yd. zero	-1.5"	5.2"	6.4"	0.0"	-17.1"	-49.6"	-102.5"
TRAJ: 400 yd. zero	-1.5"	9.5"	15.0"	12.8"	0.0"	-28.2"	-76.9"
TRAJ: 500 yd. zero	-1.5"	15.1"	26.3"	29.8"	22.6"	0.0"	-43.0"
TRAJ: 600 yd. zero	-1.5"	22.3"	40.6"	51.3"	51.3"	35.9"	0.0"
VELOCITY (fps)	2900	2468	2082	1741	1442	1206	1053
ENERGY (ft. lbs.)	1868	1353	963	673	462	323	246
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-17.0"	-41.2"	-82.1"	-144.3"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.4"	-32.4"	-71.1"	-131.2"
TRAJ: 300 yd. zero	-1.5"	5.7"	7.0"	0.0"	-18.5"	-53.7"	-110.2"
TRAJ: 400 yd. zero	-1.5"	10.3"	16.2"	13.9"	0.0"	-30.6"	-82.5"
TRAJ: 500 yd. zero	-1.5"	16.4"	28.5"	32.2"	24.5"	0.0"	-45.8"
TRAJ: 600 yd. zero	-1.5"	24.1"	43.7"	55.1"	55.0"	38.2"	0.0"
VELOCITY (fps)	2800	2378	2002	1671	1384	1167	1029
ENERGY (ft. lbs.)	1741	1256	890	621	426	302	235
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-18.6"	-44.9"	-88.8"	-155.9"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-11.4"	-35.2"	-76.7"	-141.4"
TRAJ: 300 yd. zero	-1.5"	6.2"	7.6"	0.0"	-19.9"	-57.7"	-118.5"
TRAJ: 400 yd. zero	-1.5"	11.2"	17.6"	15.0"	0.0"	-32.7"	-88.6"
TRAJ: 500 yd. zero	-1.5"	17.8"	30.7"	34.6"	26.2"	0.0"	-49.3"
TRAJ: 600 yd. zero	-1.5"	26.0"	47.2"	59.3"	59.1"	41.1"	0.0"
VELOCITY (fps)	2700	2288	1922	1604	1329	1132	1007
ENERGY (ft. lbs.)	1619	1163	821	571	392	285	225
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.3"	-20.2"	-48.7"	-96.3"	-167.8"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-12.2"	-38.0"	-82.8"	-151.8"
TRAJ: 300 yd. zero	-1.5"	6.8"	8.2"	0.0"	-21.7"	-62.5"	-127.3"
TRAJ: 400 yd. zero	-1.5"	12.2"	19.0"	16.3"	0.0"	-35.3"	-94.7"
TRAJ: 500 yd. zero	-1.5"	19.3"	33.2"	37.5"	28.3"	0.0"	-52.3"
TRAJ: 600 yd. zero	-1.5"	28.0"	50.6"	63.7"	63.2"	43.6"	0.0"



## 25 CALIBER (.257" Dia.) 60 GRAIN FLAT POINT

SECTIONAL DENSITY: .130 BALLISTIC COEFFICIENT: .122

## BALLISTICS TABLES

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3800	3351	2933	2546	2194	1877	1599
ENERGY (ft. lbs.)	1924	1496	1146	864	641	470	341
TRAJ: 50 yd. zero	-1.5"	0.0"	.7"	.4"	-1.3"	-4.8"	-10.8"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.6"	-2.7"	-6.6"	-13.0"
TRAJ: 150 yd. zero	-1.5"	-.1"	.5"	0.0"	-1.8"	-5.5"	-11.6"
TRAJ: 200 yd. zero	-1.5"	.3"	1.4"	1.4"	0.0"	-3.2"	-8.9"
TRAJ: 250 yd. zero	-1.5"	1.0"	2.7"	3.3"	2.6"	0.0"	-5.0"
TRAJ: 300 yd. zero	-1.5"	1.8"	4.3"	5.8"	5.9"	4.2"	0.0"
VELOCITY (fps)	3700	3258	2846	2466	2122	1813	1544
ENERGY (ft. lbs.)	1824	1414	1080	811	600	438	318
TRAJ: 50 yd. zero	-1.5"	0.0"	.7"	.2"	-1.6"	-5.5"	-11.9"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.7"	-2.9"	-7.1"	-13.9"
TRAJ: 150 yd. zero	-1.5"	0.0"	.5"	0.0"	-1.9"	-5.8"	-12.4"
TRAJ: 200 yd. zero	-1.5"	.4"	1.5"	1.5"	0.0"	-3.4"	-9.4"
TRAJ: 250 yd. zero	-1.5"	1.1"	2.9"	3.5"	2.7"	0.0"	-5.3"
TRAJ: 300 yd. zero	-1.5"	2.0"	4.7"	6.2"	6.3"	4.5"	0.0"
VELOCITY (fps)	3600	3165	2760	2387	2051	1750	1480
ENERGY (ft. lbs.)	1727	1335	1015	760	561	408	292
TRAJ: 50 yd. zero	-1.5"	0.0"	.6"	.1"	-2.0"	-6.2"	-13.3"
TRAJ: 100 yd. zero	-1.5"	-.3"	0.0"	-.8"	-3.2"	-7.8"	-15.1"
TRAJ: 150 yd. zero	-1.5"	0.0"	.6"	0.0"	-2.1"	-6.4"	-13.4"
TRAJ: 200 yd. zero	-1.5"	.5"	1.6"	1.6"	0.0"	-3.7"	-10.2"
TRAJ: 250 yd. zero	-1.5"	1.3"	3.1"	3.9"	3.0"	0.0"	-5.7"
TRAJ: 300 yd. zero	-1.5"	2.2"	5.1"	6.7"	6.8"	4.8"	0.0"
VELOCITY (fps)	3500	3071	2674	2309	1981	1688	1428
ENERGY (ft. lbs.)	1632	1257	953	711	523	380	272
TRAJ: 50 yd. zero	-1.5"	0.0"	.6"	-.1"	-2.4"	-7.0"	-14.6"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-.9"	-3.5"	-8.4"	-16.3"
TRAJ: 150 yd. zero	-1.5"	0.0"	.6"	0.0"	-2.2"	-6.8"	-14.4"
TRAJ: 200 yd. zero	-1.5"	.6"	1.8"	1.7"	0.0"	-3.9"	-11.0"
TRAJ: 250 yd. zero	-1.5"	1.4"	3.4"	4.1"	3.2"	0.0"	-6.2"
TRAJ: 300 yd. zero	-1.5"	2.4"	5.5"	7.2"	7.4"	5.2"	0.0"
VELOCITY (fps)	3400	2978	2588	2231	1911	1628	1377
ENERGY (ft. lbs.)	1541	1182	892	664	487	353	253
TRAJ: 50 yd. zero	-1.5"	0.0"	.5"	-.3"	-3.0"	-8.0"	-16.3"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-1.0"	-3.9"	-9.2"	-17.8"
TRAJ: 150 yd. zero	-1.5"	.1"	.7"	0.0"	-2.5"	-7.4"	-15.6"
TRAJ: 200 yd. zero	-1.5"	.8"	2.0"	1.9"	0.0"	-4.2"	-11.8"
TRAJ: 250 yd. zero	-1.5"	1.6"	3.7"	4.5"	3.4"	0.0"	-6.7"
TRAJ: 300 yd. zero	-1.5"	2.7"	5.9"	7.8"	7.9"	5.6"	0.0"
VELOCITY (fps)	3300	2886	2502	2155	1842	1569	1327
ENERGY (ft. lbs.)	1451	1110	834	619	452	328	235
TRAJ: 50 yd. zero	-1.5"	0.0"	.4"	-.5"	-3.4"	-8.9"	-17.9"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-1.2"	-4.3"	-10.0"	-19.2"
TRAJ: 150 yd. zero	-1.5"	.2"	.8"	0.0"	-2.7"	-8.0"	-16.8"
TRAJ: 200 yd. zero	-1.5"	.9"	2.2"	2.0"	0.0"	-4.6"	-12.7"
TRAJ: 250 yd. zero	-1.5"	1.8"	4.0"	4.8"	3.7"	0.0"	-7.2"
TRAJ: 300 yd. zero	-1.5"	3.0"	6.4"	8.4"	8.5"	6.0"	0.0"
VELOCITY (fps)	3200	2793	2417	2078	1774	1501	1273
ENERGY (ft. lbs.)	1365	1039	779	576	419	300	216
TRAJ: 50 yd. zero	-1.5"	0.0"	.4"	-.7"	-3.9"	-9.9"	-19.8"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.3"	-4.6"	-10.8"	-20.9"
TRAJ: 150 yd. zero	-1.5"	.3"	.9"	0.0"	-2.9"	-8.6"	-18.2"
TRAJ: 200 yd. zero	-1.5"	1.0"	2.3"	2.2"	0.0"	-4.9"	-13.8"
TRAJ: 250 yd. zero	-1.5"	2.0"	4.3"	5.2"	4.0"	0.0"	-7.9"
TRAJ: 300 yd. zero	-1.5"	3.3"	7.0"	9.1"	9.3"	6.6"	0.0"
VELOCITY (fps)	3100	2700	2333	2002	1707	1444	1229
ENERGY (ft. lbs.)	1281	972	725	534	388	278	201
TRAJ: 50 yd. zero	-1.5"	0.0"	.3"	-1.0"	-4.7"	-11.3"	-21.9"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.5"	-5.2"	-12.0"	-22.8"
TRAJ: 150 yd. zero	-1.5"	.4"	1.0"	0.0"	-3.2"	-9.4"	-19.7"
TRAJ: 200 yd. zero	-1.5"	1.2"	2.6"	2.4"	0.0"	-5.4"	-14.8"
TRAJ: 250 yd. zero	-1.5"	2.3"	4.8"	5.7"	4.3"	0.0"	-8.3"
TRAJ: 300 yd. zero	-1.5"	3.7"	7.6"	9.9"	9.9"	7.0"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3000	2607	2249	1927	1642	1388	1189
ENERGY (ft. lbs.)	1199	906	674	495	359	257	188
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.3"	-5.3"	-12.5"	-24.1"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.6"	-5.7"	-13.0"	-24.7"
TRAJ: 150 yd. zero	-1.5"	.5"	1.1"	0.0"	-3.5"	-10.2"	-21.4"
TRAJ: 200 yd. zero	-1.5"	1.3"	2.9"	2.7"	0.0"	-5.8"	-16.1"
TRAJ: 250 yd. zero	-1.5"	2.5"	5.2"	6.2"	4.7"	0.0"	-9.0"
TRAJ: 300 yd. zero	-1.5"	4.0"	8.3"	10.7"	10.7"	7.6"	0.0"
VELOCITY (fps)	2900	2515	2166	1853	1578	1335	1153
ENERGY (ft. lbs.)	1121	843	625	458	332	237	177
TRAJ: 50 yd. zero	-1.5"	0.0"	.1"	-1.6"	-6.1"	-14.0"	-26.6"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.8"	-6.3"	-14.2"	-26.9"
TRAJ: 150 yd. zero	-1.5"	.6"	1.2"	0.0"	-3.8"	-11.2"	-23.2"
TRAJ: 200 yd. zero	-1.5"	1.5"	3.2"	2.9"	0.0"	-6.3"	-17.4"
TRAJ: 250 yd. zero	-1.5"	2.8"	5.7"	6.7"	5.1"	0.0"	-9.7"
TRAJ: 300 yd. zero	-1.5"	4.4"	9.0"	11.6"	11.6"	8.1"	0.0"
VELOCITY (fps)	2800	2424	2084	1779	1505	1276	1110
ENERGY (ft. lbs.)	1045	783	579	422	302	217	164
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-2.0"	-6.8"	-15.5"	-29.2"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-2.0"	-6.8"	-15.5"	-29.2"
TRAJ: 150 yd. zero	-1.5"	.7"	1.4"	0.0"	-4.1"	-12.1"	-25.2"
TRAJ: 200 yd. zero	-1.5"	1.7"	3.4"	3.1"	0.0"	-6.9"	-19.0"
TRAJ: 250 yd. zero	-1.5"	3.1"	6.2"	7.3"	5.6"	0.0"	-10.6"
TRAJ: 300 yd. zero	-1.5"	4.9"	9.8"	12.6"	12.7"	8.9"	0.0"
VELOCITY (fps)	2700	2333	2002	1707	1444	1229	1080
ENERGY (ft. lbs.)	971	725	534	388	278	201	156
TRAJ: 50 yd. zero	-1.5"	0.0"	-.1"	2.5"	-7.9"	-17.4"	-32.3"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.3"	-7.6"	-17.0"	-31.8"
TRAJ: 150 yd. zero	-1.5"	.9"	1.6"	0.0"	-4.5"	-13.2"	-27.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	3.8"	3.4"	0.0"	-7.5"	-20.3"
TRAJ: 250 yd. zero	-1.5"	3.5"	6.8"	7.9"	6.0"	0.0"	-11.3"
TRAJ: 300 yd. zero	-1.5"	5.4"	10.6"	13.6"	13.6"	9.5"	0.0"
VELOCITY (fps)	2600	2243	1921	1637	1384	1186	1053
ENERGY (ft. lbs.)	901	670	492	357	255	187	148
TRAJ: 50 yd. zero	-1.5"	0.0"	-.2"	-2.9"	-8.9"	-19.4"	-35.6"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.5"	-8.3"	-18.7"	-34.8"
TRAJ: 150 yd. zero	-1.5"	1.0"	1.7"	0.0"	-5.0"	-14.5"	-29.7"
TRAJ: 200 yd. zero	-1.5"	2.2"	4.2"	3.8"	0.0"	-8.3"	-22.2"
TRAJ: 250 yd. zero	-1.5"	3.9"	7.5"	8.7"	6.6"	0.0"	-12.3"
TRAJ: 300 yd. zero	-1.5"	5.9"	11.6"	14.9"	14.8"	10.3"	0.0"
VELOCITY (fps)	2500	2153	1841	1567	1326	1147	1027
ENERGY (ft. lbs.)	833	617	451	327	234*	175	141
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.4"	-10.1"	-21.5"	-38.9"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.8"	-9.2"	-20.4"	-37.6"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.9"	0.0"	-5.4"	-15.7"	-31.9"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.6"	4.1"	0.0"	-8.9"	-23.7"
TRAJ: 250 yd. zero	-1.5"	4.3"	8.2"	9.5"	7.1"	0.0"	-13.0"
TRAJ: 300 yd. zero	-1.5"	6.5"	12.5"	16.0"	15.8"	10.9"	0.0"
VELOCITY (fps)	2400	2063	1760	1489	1264	1102	996
ENERGY (ft. lbs.)	768	567	413	295	213	162	132
TRAJ: 50 yd. zero	-1.5"	0.0"	-.6"	-4.0"	-11.5"	-24.1"	-43.1"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-3.1"	-10.3"	-22.6"	-41.3"
TRAJ: 150 yd. zero	-1.5"	1.3"	2.1"	0.0"	-6.1"	-17.4"	-35.0"
TRAJ: 200 yd. zero	-1.5"	2.9"	5.2"	4.6"	0.0"	-9.7"	-25.8"
TRAJ: 250 yd. zero	-1.5"	4.8"	9.1"	10.5"	7.8"	0.0"	-14.0"
TRAJ: 300 yd. zero	-1.5"	7.2"	13.8"	17.5"	17.2"	11.7"	0.0"
VELOCITY (fps)	2300	1973	1681	1422	1213	1070	973
ENERGY (ft. lbs.)	705	519	377	269	196	153	126
TRAJ: 50 yd. zero	-1.5"	0.0"	-.8"	-4.7"	-12.9"	-26.6"	-47.1"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.5"	-11.3"	-24.6"	-44.6"
TRAJ: 150 yd. zero	-1.5"	1.6"	2.3"	0.0"	-6.6"	-18.8"	-37.6"
TRAJ: 200 yd. zero	-1.5"	3.2"	5.7"	5.0"	0.0"	-10.4"	-27.6"
TRAJ: 250 yd. zero	-1.5"	5.3"	9.9"	11.3"	8.4"	0.0"	-15.1"
TRAJ: 300 yd. zero	-1.5"	7.9"	14.9"	18.8"	18.5"	12.6"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2200	1883	1604	1356	1187	1041	951
ENERGY (ft. lbs.)	645	473	343	245	181	144	121
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .9"	- 5.4"	- 14.5"	- 29.6"	- 51.7"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.9"	- 12.5"	- 27.1"	- 48.7"
TRAJ: 150 yd. zero	- 1.5"	1.8"	2.6"	0.0"	- 7.3"	- 20.6"	- 40.9"
TRAJ: 200 yd. zero	- 1.5"	3.6"	6.3"	5.5"	0.0"	- 11.5"	- 29.9"
TRAJ: 250 yd. zero	- 1.5"	5.9"	10.9"	12.4"	9.2"	0.0"	- 16.1"
TRAJ: 300 yd. zero	- 1.5"	8.6"	16.3"	20.5"	20.0"	13.4"	0.0"
VELOCITY (fps)	2100	1794	1527	1294	1126	1013	929
ENERGY (ft. lbs.)	588	429	311	223	169	137	115
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.2"	- 6.3"	- 16.7"	- 33.2"	- 57.3"
TRAJ: 100 yd. zero	- 1.5"	.6"	0.0"	- 4.4"	- 14.1"	- 30.0"	- 53.5"
TRAJ: 150 yd. zero	- 1.5"	2.1"	3.0"	0.0"	- 8.2"	- 22.6"	- 44.5"
TRAJ: 200 yd. zero	- 1.5"	4.2"	7.1"	6.2"	0.0"	- 12.3"	- 32.2"
TRAJ: 250 yd. zero	- 1.5"	6.7"	12.0"	13.6"	9.9"	0.0"	- 17.4"
TRAJ: 300 yd. zero	- 1.5"	9.6"	17.8"	22.3"	21.5"	14.6"	0.0"
VELOCITY (fps)	2000	1705	1442	1228	1080	980	899
ENERGY (ft. lbs.)	533	387	277	201	155	128	108
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.5"	- 7.3"	- 18.7"	- 36.7"	- 62.5"
TRAJ: 100 yd. zero	- 1.5"	.8"	0.0"	- 4.9"	- 15.5"	- 32.8"	- 57.8"
TRAJ: 150 yd. zero	- 1.5"	2.4"	3.3"	0.0"	- 8.9"	- 24.5"	- 47.8"
TRAJ: 200 yd. zero	- 1.5"	4.7"	7.8"	6.7"	0.0"	- 13.4"	- 34.4"
TRAJ: 250 yd. zero	- 1.5"	7.4"	13.1"	14.7"	10.7"	0.0"	- 18.3"
TRAJ: 300 yd. zero	- 1.5"	10.4"	19.3"	23.9"	23.0"	15.3"	0.0"
VELOCITY (fps)	1900	1618	1368	1175	1046	955	877
ENERGY (ft. lbs.)	481	349	250	184	146	122	103
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.8"	- 8.4"	- 21.1"	- 40.8"	- 68.7"
TRAJ: 100 yd. zero	- 1.5"	.9"	0.0"	- 5.6"	- 17.3"	- 36.1"	- 63.1"
TRAJ: 150 yd. zero	- 1.5"	2.8"	3.8"	0.0"	- 9.7"	- 26.7"	- 51.7"
TRAJ: 200 yd. zero	- 1.5"	5.3"	8.7"	7.3"	0.0"	- 14.4"	- 37.1"
TRAJ: 250 yd. zero	- 1.5"	8.2"	14.5"	16.0"	11.6"	0.0"	- 19.7"
TRAJ: 300 yd. zero	- 1.5"	11.5"	21.0"	25.9"	24.7"	16.5"	0.0"
VELOCITY (fps)	1800	1533	1298	1129	1015	931	856
ENERGY (ft. lbs.)	432	313	225	170	137	115	98
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 2.2"	- 9.7"	- 23.6"	- 45.2"	- 75.3"
TRAJ: 100 yd. zero	- 1.5"	1.1"	0.0"	- 6.2"	- 19.0"	- 39.5"	- 68.5"
TRAJ: 150 yd. zero	- 1.5"	3.2"	4.2"	0.0"	- 10.7"	- 29.0"	- 55.9"
TRAJ: 200 yd. zero	- 1.5"	5.9"	9.5"	8.0"	0.0"	- 15.6"	- 39.9"
TRAJ: 250 yd. zero	- 1.5"	9.0"	15.8"	17.4"	12.5"	0.0"	- 21.1"
TRAJ: 300 yd. zero	- 1.5"	12.6"	22.8"	28.0"	26.6"	17.6"	0.0"

**25 CALIBER (.257" Dia.) 75 GRAIN HOLLOW POINT**  
SECTIONAL DENSITY: .162 BALLISTIC COEFFICIENT: .302

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	4000	3624	3269	2933	2618	2325	2056
ENERGY (ft. lbs.)	2665	2188	1780	1433	1141	900	704
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.2"	- 5.7"	- 14.5"	- 28.3"	- 48.6"
TRAJ: 200 yd. zero	- 1.5"	.6"	0.0"	- 3.9"	- 12.0"	- 25.3"	- 45.0"
TRAJ: 300 yd. zero	- 1.5"	1.9"	2.6"	0.0"	- 6.8"	- 18.7"	- 37.0"
TRAJ: 400 yd. zero	- 1.5"	3.6"	6.0"	5.1"	0.0"	- 10.2"	- 26.8"
TRAJ: 500 yd. zero	- 1.5"	5.7"	10.1"	11.2"	8.2"	0.0"	- 14.6"
TRAJ: 600 yd. zero	- 1.5"	8.1"	15.0"	18.5"	17.9"	12.2"	0.0"
VELOCITY (fps)	3900	3529	3179	2849	2539	2252	1989
ENERGY (ft. lbs.)	2534	2075	1684	1352	1074	845	659
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.3"	- 6.2"	- 15.6"	- 30.4"	- 52.2"
TRAJ: 200 yd. zero	- 1.5"	.7"	0.0"	- 4.2"	- 12.8"	- 27.0"	- 48.1"
TRAJ: 300 yd. zero	- 1.5"	2.1"	2.8"	0.0"	- 7.2"	- 20.0"	- 39.6"
TRAJ: 400 yd. zero	- 1.5"	3.9"	6.4"	5.4"	0.0"	- 10.9"	- 28.7"
TRAJ: 500 yd. zero	- 1.5"	6.1"	10.8"	12.0"	8.8"	0.0"	- 15.6"
TRAJ: 600 yd. zero	- 1.5"	8.7"	16.0"	19.8"	19.2"	13.0"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3435	3090	2785	2461	2180	1923
ENERGY (ft. lbs.)	2405	1965	1590	1274	1009	792	616
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.4"	-6.6"	-16.3"	-32.1"	-55.3"
TRAJ: 200 yd. zero	-1.5"	.7"	0.0"	-4.4"	-13.4"	-28.5"	-50.9"
TRAJ: 300 yd. zero	-1.5"	2.2"	2.9"	0.0"	-7.5"	-21.1"	-42.1"
TRAJ: 400 yd. zero	-1.5"	4.1"	6.7"	5.7"	0.0"	-11.7"	-30.8"
TRAJ: 500 yd. zero	-1.5"	6.4"	11.4"	12.7"	9.4"	0.0"	-16.7"
TRAJ: 600 yd. zero	-1.5"	9.2"	17.0"	21.1"	20.5"	14.0"	0.0"
VELOCITY (fps)	3700	3340	3001	2681	2383	2109	1858
ENERGY (ft. lbs.)	2280	1859	1500	1198	946	741	575
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.6"	-7.1"	-17.6"	-34.3"	-59.2"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.7"	-14.4"	-30.2"	-54.2"
TRAJ: 300 yd. zero	-1.5"	2.4"	3.1"	0.0"	-8.1"	-22.3"	-44.8"
TRAJ: 400 yd. zero	-1.5"	4.4"	7.2"	6.1"	0.0"	-12.2"	-32.6"
TRAJ: 500 yd. zero	-1.5"	6.9"	12.1"	13.4"	9.8"	0.0"	-17.9"
TRAJ: 600 yd. zero	-1.5"	9.9"	18.1"	22.4"	21.8"	15.0"	0.0"
VELOCITY (fps)	3600	3246	2912	2598	2306	2039	1794
ENERGY (ft. lbs.)	2159	1755	1412	1124	886	692	536
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-7.8"	-19.1"	-37.1"	-63.3"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.0"	-15.4"	-32.5"	-57.8"
TRAJ: 300 yd. zero	-1.5"	2.6"	3.4"	0.0"	-8.7"	-24.0"	-47.6"
TRAJ: 400 yd. zero	-1.5"	4.8"	7.7"	6.5"	0.0"	-13.1"	-34.5"
TRAJ: 500 yd. zero	-1.5"	7.4"	13.0"	14.4"	10.5"	0.0"	-18.7"
TRAJ: 600 yd. zero	-1.5"	10.6"	19.3"	23.8"	23.1"	15.7"	0.0"
VELOCITY (fps)	3500	3151	2823	2515	2230	1969	1730
ENERGY (ft. lbs.)	2041	1654	1327	1053	828	646	499
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.5"	-20.5"	-39.8"	-68.1"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.4"	-16.4"	-34.7"	-62.0"
TRAJ: 300 yd. zero	-1.5"	2.8"	3.6"	0.0"	-9.1"	-25.6"	-51.0"
TRAJ: 400 yd. zero	-1.5"	5.1"	8.2"	6.9"	0.0"	-14.1"	-37.3"
TRAJ: 500 yd. zero	-1.5"	8.0"	13.9"	15.4"	11.4"	0.0"	-20.3"
TRAJ: 600 yd. zero	-1.5"	11.4"	20.7"	25.5"	24.9"	16.9"	0.0"
VELOCITY (fps)	3400	3057	2734	2432	2154	1899	1668
ENERGY (ft. lbs.)	1926	1557	1245	985	773	601	464
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-9.3"	-22.3"	-42.8"	-73.5"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.9"	-17.8"	-37.1"	-66.6"
TRAJ: 300 yd. zero	-1.5"	3.1"	3.9"	0.0"	-9.9"	-27.2"	-54.8"
TRAJ: 400 yd. zero	-1.5"	5.6"	8.9"	7.4"	0.0"	-14.8"	-39.9"
TRAJ: 500 yd. zero	-1.5"	8.6"	14.9"	16.4"	11.9"	0.0"	-22.0"
TRAJ: 600 yd. zero	-1.5"	12.3"	22.2"	27.4"	26.7"	18.4"	0.0"
VELOCITY (fps)	3300	2963	2646	2350	2079	1831	1607
ENERGY (ft. lbs.)	1814	1462	1166	920	720	558	430
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.5"	-10.2"	-24.4"	-46.6"	-79.4"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.4"	-19.3"	-40.2"	-71.7"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.3"	0.0"	-10.7"	-29.5"	-58.9"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.7"	8.1"	0.0"	-16.1"	-42.8"
TRAJ: 500 yd. zero	-1.5"	9.3"	16.1"	17.7"	12.9"	0.0"	-23.4"
TRAJ: 600 yd. zero	-1.5"	13.2"	23.9"	29.5"	28.5"	19.5"	0.0"
VELOCITY (fps)	3200	2869	2557	2269	2005	1763	1548
ENERGY (ft. lbs.)	1706	1371	1089	858	669	518	399
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-11.0"	-26.1"	-50.1"	-85.0"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.8"	-20.4"	-43.0"	-76.5"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.5"	0.0"	-11.3"	-31.6"	-62.9"
TRAJ: 400 yd. zero	-1.5"	6.5"	10.2"	8.5"	0.0"	-17.5"	-45.9"
TRAJ: 500 yd. zero	-1.5"	10.0"	17.2"	19.0"	14.0"	0.0"	-24.9"
TRAJ: 600 yd. zero	-1.5"	14.2"	25.5"	31.5"	30.6"	20.8"	0.0"
VELOCITY (fps)	3100	2775	2470	2189	1931	1696	1480
ENERGY (ft. lbs.)	1601	1282	1016	798	621	479	365
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-12.0"	-28.3"	-54.0"	-91.8"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.4"	-22.2"	-46.3"	-82.6"
TRAJ: 300 yd. zero	-1.5"	4.0"	5.0"	0.0"	-12.3"	-33.9"	-67.7"
TRAJ: 400 yd. zero	-1.5"	7.1"	11.1"	9.2"	0.0"	-18.5"	-49.2"
TRAJ: 500 yd. zero	-1.5"	10.8"	18.6"	20.4"	14.8"	0.0"	-26.9"
TRAJ: 600 yd. zero	-1.5"	15.3"	27.6"	33.9"	32.8"	22.5"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2680	2383	2109	1858	1631	1423
ENERGY (ft. lbs.)	1499	1197	946	741	575	443	337
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 13.0"	- 30.8"	- 59.0"	- 100.1"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.9"	- 23.9"	- 50.4"	- 89.8"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.3"	0.0"	- 13.4"	- 37.2"	- 73.9"
TRAJ: 400 yd. zero	- 1.5"	7.7"	12.0"	10.1"	0.0"	- 20.4"	- 53.8"
TRAJ: 500 yd. zero	- 1.5"	11.8"	20.2"	22.3"	16.4"	0.0"	- 29.3"
TRAJ: 600 yd. zero	- 1.5"	16.7"	29.9"	37.0"	35.9"	24.4"	0.0"
VELOCITY (fps)	2900	2587	2296	2029	1785	1568	1367
ENERGY (ft. lbs.)	1401	1114	878	686	531	409	311
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.4"	- 33.5"	- 63.9"	- 108.5"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.6"	- 25.8"	- 54.2"	- 96.9"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.8"	0.0"	- 14.2"	- 39.7"	- 79.5"
TRAJ: 400 yd. zero	- 1.5"	8.4"	12.9"	10.7"	0.0"	- 21.9"	- 58.1"
TRAJ: 500 yd. zero	- 1.5"	12.8"	21.7"	23.9"	17.5"	0.0"	- 31.8"
TRAJ: 600 yd. zero	- 1.5"	18.1"	32.3"	39.8"	38.8"	26.5"	0.0"
VELOCITY (fps)	2800	2493	2210	1951	1714	1495	1306
ENERGY (ft. lbs.)	1306	1036	814	634	490	373	284
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.5"	- 36.5"	- 69.1"	- 117.3"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.2"	- 28.0"	- 58.6"	- 104.7"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.2"	0.0"	- 15.7"	- 43.1"	- 86.2"
TRAJ: 400 yd. zero	- 1.5"	9.1"	14.0"	11.8"	0.0"	- 23.5"	- 62.6"
TRAJ: 500 yd. zero	- 1.5"	13.8"	23.5"	25.9"	18.8"	0.0"	- 34.3"
TRAJ: 600 yd. zero	- 1.5"	19.6"	34.9"	43.1"	41.8"	28.6"	0.0"
VELOCITY (fps)	2700	2401	2125	1873	1645	1435	1256
ENERGY (ft. lbs.)	1214	960	752	584	451	343	263
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.3"	- 40.0"	- 75.8"	- 128.7"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.2"	- 30.5"	- 64.0"	- 114.4"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.8"	0.0"	- 16.9"	- 46.9"	- 94.0"
TRAJ: 400 yd. zero	- 1.5"	10.0"	15.3"	12.7"	0.0"	- 25.8"	- 68.6"
TRAJ: 500 yd. zero	- 1.5"	15.2"	25.6"	28.2"	20.7"	0.0"	- 37.6"
TRAJ: 600 yd. zero	- 1.5"	21.5"	38.2"	47.0"	45.8"	31.4"	0.0"
VELOCITY (fps)	2600	2308	2041	1796	1577	1375	1210
ENERGY (ft. lbs.)	1126	888	694	537	414	315	244
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 19.0"	- 43.7"	- 82.5"	- 140.0"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.3"	- 33.4"	- 69.5"	- 124.5"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.5"	0.0"	- 18.3"	- 50.7"	- 101.9"
TRAJ: 400 yd. zero	- 1.5"	10.9"	16.7"	13.7"	0.0"	- 27.8"	- 74.4"
TRAJ: 500 yd. zero	- 1.5"	16.5"	27.8"	30.4"	22.3"	0.0"	- 41.0"
TRAJ: 600 yd. zero	- 1.5"	23.3"	41.5"	51.0"	49.6"	34.2"	0.0"
VELOCITY (fps)	2500	2216	1956	1719	1500	1310	1162
ENERGY (ft. lbs.)	1041	818	638	492	375	286	225
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.8"	- 21.0"	- 47.9"	- 90.8"	- 154.1"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.2"	- 36.2"	- 76.2"	- 136.5"
TRAJ: 300 yd. zero	- 1.5"	7.0"	8.2"	0.0"	- 19.8"	- 55.8"	- 112.1"
TRAJ: 400 yd. zero	- 1.5"	12.0"	18.1"	14.9"	0.0"	- 30.9"	- 82.2"
TRAJ: 500 yd. zero	- 1.5"	18.2"	30.5"	33.5"	24.8"	0.0"	- 45.1"
TRAJ: 600 yd. zero	- 1.5"	25.7"	45.5"	56.1"	54.8"	37.6"	0.0"
VELOCITY (fps)	2400	2125	1872	1644	1434	1256	1125
ENERGY (ft. lbs.)	959	752	584	450	343	263	211
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.4"	- 22.9"	- 52.7"	- 99.6"	- 167.8"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 13.3"	- 39.9"	- 83.5"	- 148.6"
TRAJ: 300 yd. zero	- 1.5"	7.7"	8.9"	0.0"	- 22.1"	- 61.3"	- 121.9"
TRAJ: 400 yd. zero	- 1.5"	13.2"	20.0"	16.6"	0.0"	- 33.7"	- 88.7"
TRAJ: 500 yd. zero	- 1.5"	19.9"	33.4"	36.8"	27.0"	0.0"	- 48.3"
TRAJ: 600 yd. zero	- 1.5"	28.0"	49.5"	61.0"	59.2"	40.3"	0.0"
VELOCITY (fps)	2300	2033	1788	1570	1370	1206	1086
ENERGY (ft. lbs.)	881	688	533	411	313	242	196
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.0"	- 25.2"	- 57.8"	- 108.8"	- 182.9"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 14.6"	- 43.7"	- 91.2"	- 161.7"
TRAJ: 300 yd. zero	- 1.5"	8.4"	9.8"	0.0"	- 24.1"	- 66.7"	- 132.4"
TRAJ: 400 yd. zero	- 1.5"	14.5"	21.9"	18.1"	0.0"	- 36.5"	- 96.1"
TRAJ: 500 yd. zero	- 1.5"	21.8"	36.5"	40.1"	29.2"	0.0"	- 52.3"
TRAJ: 600 yd. zero	- 1.5"	30.5"	53.9"	66.2"	64.1"	43.6"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2200	1941	1706	1488	1300	1155	1050
ENERGY (ft. lbs.)	806	628	485	369	281	222	184
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.1"	- 28.3"	- 64.7"	- 120.8"	- 200.9"
TRAJ: 200 yd. zero	- 1.5"	4.1"	0.0"	- 18.2"	- 48.5"	- 100.6"	- 176.8"
TRAJ: 300 yd. zero	- 1.5"	9.5"	10.8"	0.0"	- 26.8"	- 73.5"	- 144.1"
TRAJ: 400 yd. zero	- 1.5"	16.2"	24.3"	20.2"	0.0"	- 39.9"	- 103.8"
TRAJ: 500 yd. zero	- 1.5"	24.2"	40.3"	44.1"	32.0"	0.0"	- 55.9"
TRAJ: 600 yd. zero	- 1.5"	33.5"	58.9"	72.1"	89.2"	46.6"	0.0"

**25 CALIBER (.257" Dia.) 87 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .188 BALLISTIC COEFFICIENT: .308

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3442	3103	2783	2484	2207	1952
ENERGY (ft. lbs.)	2790	2289	1861	1497	1192	941	736
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.4"	- 6.5"	- 16.2"	- 31.7"	- 54.2"
TRAJ: 200 yd. zero	- 1.5"	.7"	0.0"	- 4.3"	- 13.2"	- 28.0"	- 49.8"
TRAJ: 300 yd. zero	- 1.5"	2.2"	2.9"	0.0"	- 7.4"	- 20.7"	- 41.1"
TRAJ: 400 yd. zero	- 1.5"	4.1"	6.6"	5.6"	0.0"	- 11.4"	- 29.9"
TRAJ: 500 yd. zero	- 1.5"	6.3"	11.2"	12.4"	9.2"	0.0"	- 16.2"
TRAJ: 600 yd. zero	- 1.5"	9.0"	16.6"	20.6"	20.0"	13.5"	0.0"
VELOCITY (fps)	3700	3347	3014	2699	2406	2135	1886
ENERGY (ft. lbs.)	2645	2165	1755	1408	1118	881	688
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.6"	- 7.1"	- 17.5"	- 34.1"	- 58.4"
TRAJ: 200 yd. zero	- 1.5"	.8"	0.0"	- 4.6"	- 14.2"	- 30.0"	- 53.4"
TRAJ: 300 yd. zero	- 1.5"	2.4"	3.1"	0.0"	- 7.9"	- 22.2"	- 44.1"
TRAJ: 400 yd. zero	- 1.5"	4.4"	7.1"	6.0"	0.0"	- 12.2"	- 32.1"
TRAJ: 500 yd. zero	- 1.5"	6.8"	12.0"	13.4"	9.8"	0.0"	- 17.4"
TRAJ: 600 yd. zero	- 1.5"	9.7"	17.8"	22.1"	21.4"	14.5"	0.0"
VELOCITY (fps)	3600	3253	2924	2615	2328	2064	1821
ENERGY (ft. lbs.)	2504	2044	1653	1322	1047	823	641
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.8"	- 7.7"	- 18.9"	- 36.5"	- 62.5"
TRAJ: 200 yd. zero	- 1.5"	.9"	0.0"	- 5.0"	- 15.2"	- 31.9"	- 57.0"
TRAJ: 300 yd. zero	- 1.5"	2.6"	3.4"	0.0"	- 8.5"	- 23.5"	- 46.9"
TRAJ: 400 yd. zero	- 1.5"	4.7"	7.6"	6.4"	0.0"	- 12.8"	- 34.1"
TRAJ: 500 yd. zero	- 1.5"	7.3"	12.8"	14.1"	10.3"	0.0"	- 18.6"
TRAJ: 600 yd. zero	- 1.5"	10.4"	19.0"	23.5"	22.7"	15.6"	0.0"
VELOCITY (fps)	3500	3158	2835	2532	2251	1993	1757
ENERGY (ft. lbs.)	2367	1927	1553	1239	979	768	596
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.0"	- 8.4"	- 20.5"	- 39.5"	- 67.6"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.4"	- 16.4"	- 34.4"	- 61.5"
TRAJ: 300 yd. zero	- 1.5"	2.8"	3.6"	0.0"	- 9.2"	- 25.4"	- 50.6"
TRAJ: 400 yd. zero	- 1.5"	5.1"	8.2"	6.9"	0.0"	- 13.8"	- 36.7"
TRAJ: 500 yd. zero	- 1.5"	7.9"	13.8"	15.3"	11.1"	0.0"	- 20.1"
TRAJ: 600 yd. zero	- 1.5"	11.3"	20.5"	25.3"	24.5"	16.8"	0.0"
VELOCITY (fps)	3400	3064	2746	2449	2175	1923	1694
ENERGY (ft. lbs.)	2234	1814	1457	1159	914	715	554
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.2"	- 9.2"	- 22.1"	- 42.5"	- 72.3"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.8"	- 17.5"	- 36.8"	- 65.4"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.9"	0.0"	- 9.7"	- 27.1"	- 53.7"
TRAJ: 400 yd. zero	- 1.5"	5.5"	8.8"	7.3"	0.0"	- 14.9"	- 39.1"
TRAJ: 500 yd. zero	- 1.5"	8.5"	14.7"	16.3"	11.9"	0.0"	- 21.2"
TRAJ: 600 yd. zero	- 1.5"	12.1"	21.8"	26.9"	26.1"	17.7"	0.0"
VELOCITY (fps)	3300	2969	2658	2367	2099	1854	1632
ENERGY (ft. lbs.)	2104	1704	1365	1083	852	664	515
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 10.1"	- 24.1"	- 46.3"	- 78.7"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.3"	- 19.0"	- 39.9"	- 71.1"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.2"	0.0"	- 10.5"	- 29.3"	- 58.4"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.5"	7.9"	0.0"	- 16.1"	- 42.6"
TRAJ: 500 yd. zero	- 1.5"	9.3"	16.0"	17.6"	12.9"	0.0"	- 23.2"
TRAJ: 600 yd. zero	- 1.5"	13.1"	23.7"	29.2"	28.4"	19.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2875	2569	2285	2024	1785	1572
ENERGY (ft. lbs.)	1979	1597	1275	1009	792	616	477
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-10.9"	-26.0"	-49.6"	-84.1"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.7"	-20.4"	-42.5"	-75.6"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.5"	0.0"	-11.4"	-31.2"	-62.1"
TRAJ: 400 yd. zero	-1.5"	6.5"	10.2"	8.6"	0.0"	-16.9"	-45.0"
TRAJ: 500 yd. zero	-1.5"	9.9"	17.0"	18.8"	13.6"	0.0"	-24.6"
TRAJ: 600 yd. zero	-1.5"	14.0"	25.2"	31.1"	30.0"	20.5"	0.0"
VELOCITY (fps)	3100	2781	2481	2204	1950	1718	1502
ENERGY (ft. lbs.)	1857	1494	1189	939	735	570	436
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.9"	-27.9"	-53.4"	-90.8"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.3"	-21.8"	-45.8"	-81.7"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.9"	0.0"	-12.0"	-33.6"	-66.9"
TRAJ: 400 yd. zero	-1.5"	7.0"	10.9"	9.1"	0.0"	-18.5"	-48.8"
TRAJ: 500 yd. zero	-1.5"	10.7"	18.3"	20.2"	14.8"	0.0"	-26.6"
TRAJ: 600 yd. zero	-1.5"	15.1"	27.2"	33.5"	32.6"	22.2"	0.0"
VELOCITY (fps)	3000	2687	2394	2124	1876	1652	1445
ENERGY (ft. lbs.)	1739	1395	1107	872	680	527	403
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.4"	-12.9"	-30.3"	-57.7"	-97.6"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.8"	-23.5"	-49.1"	-87.4"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.2"	0.0"	-13.1"	-36.1"	-71.7"
TRAJ: 400 yd. zero	-1.5"	7.6"	11.8"	9.9"	0.0"	-19.7"	-52.0"
TRAJ: 500 yd. zero	-1.5"	11.5"	19.7"	21.7"	15.8"	0.0"	-28.3"
TRAJ: 600 yd. zero	-1.5"	16.3"	29.1"	35.9"	34.7"	23.7"	0.0"
VELOCITY (fps)	2900	2593	2307	2044	1803	1588	1388
ENERGY (ft. lbs.)	1625	1299	1028	808	628	487	372
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-14.3"	-33.4"	-63.7"	-107.3"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.5"	-25.8"	-54.1"	-95.8"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.7"	0.0"	-14.3"	-39.8"	-78.6"
TRAJ: 400 yd. zero	-1.5"	8.4"	12.9"	10.8"	0.0"	-21.8"	-57.1"
TRAJ: 500 yd. zero	-1.5"	12.7"	21.7"	23.9"	17.5"	0.0"	-30.8"
TRAJ: 600 yd. zero	-1.5"	17.9"	31.9"	39.3"	38.1"	25.7"	0.0"
VELOCITY (fps)	2800	2499	2221	1965	1732	1515	1325
ENERGY (ft. lbs.)	1515	1207	953	746	579	443	339
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.6"	-36.2"	-68.3"	-115.7"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.4"	-27.8"	-57.9"	-103.2"
TRAJ: 300 yd. zero	-1.5"	5.2"	6.3"	0.0"	-15.3"	-42.1"	-84.3"
TRAJ: 400 yd. zero	-1.5"	9.1"	13.9"	11.5"	0.0"	-23.0"	-61.3"
TRAJ: 500 yd. zero	-1.5"	13.7"	23.2"	25.3"	18.4"	0.0"	-33.7"
TRAJ: 600 yd. zero	-1.5"	19.3"	34.4"	42.2"	40.9"	28.1"	0.0"
VELOCITY (fps)	2700	2406	2135	1887	1661	1453	1274
ENERGY (ft. lbs.)	1409	1119	881	688	533	408	314
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-17.1"	-39.8"	-75.0"	-126.7"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.0"	-30.4"	-63.2"	-112.6"
TRAJ: 300 yd. zero	-1.5"	5.7"	6.7"	0.0"	-16.9"	-46.4"	-92.5"
TRAJ: 400 yd. zero	-1.5"	10.0"	15.2"	12.7"	0.0"	-25.2"	-67.0"
TRAJ: 500 yd. zero	-1.5"	15.0"	25.3"	27.9"	20.2"	0.0"	-36.7"
TRAJ: 600 yd. zero	-1.5"	21.1"	37.6"	46.3"	44.7"	30.6"	0.0"
VELOCITY (fps)	2600	2314	2051	1809	1593	1393	1226
ENERGY (ft. lbs.)	1306	1035	813	632	490	375	290
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-18.8"	-43.4"	-82.0"	-138.1"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-11.1"	-33.2"	-69.2"	-122.8"
TRAJ: 300 yd. zero	-1.5"	6.3"	7.4"	0.0"	-18.3"	-50.6"	-100.5"
TRAJ: 400 yd. zero	-1.5"	10.9"	16.6"	13.8"	0.0"	-27.7"	-72.9"
TRAJ: 500 yd. zero	-1.5"	16.4"	27.7"	30.4"	22.2"	0.0"	-39.7"
TRAJ: 600 yd. zero	-1.5"	23.0"	40.9"	50.3"	48.7"	33.1"	0.0"
VELOCITY (fps)	2500	2222	1966	1732	1525	1334	1182
ENERGY (ft. lbs.)	1208	954	747	580	449	344	270
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.7"	-20.6"	-47.5"	-89.4"	-150.1"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.9"	-35.9"	-74.9"	-132.7"
TRAJ: 300 yd. zero	-1.5"	6.9"	8.0"	0.0"	-19.9"	-54.9"	-108.7"
TRAJ: 400 yd. zero	-1.5"	11.9"	18.0"	15.0"	0.0"	-30.0"	-78.8"
TRAJ: 500 yd. zero	-1.5"	17.9"	30.0"	33.0"	24.0"	0.0"	-42.8"
TRAJ: 600 yd. zero	-1.5"	25.0"	44.3"	54.4"	52.6"	35.7"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2130	1882	1657	1449	1271	1137
ENERGY (ft. lbs.)	1113	876	684	530	406	312	250
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.3"	-22.5"	-51.8"	-97.9"	-164.9"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-13.0"	-39.1"	-82.1"	-145.9"
TRAJ: 300 yd. zero	-1.5"	7.5"	8.7"	0.0"	-21.7"	-60.3"	-119.8"
TRAJ: 400 yd. zero	-1.5"	13.0"	19.6"	16.3"	0.0"	-33.2"	-87.2"
TRAJ: 500 yd. zero	-1.5"	19.6"	32.9"	36.2"	26.6"	0.0"	-47.3"
TRAJ: 600 yd. zero	-1.5"	27.5"	48.7"	59.9"	58.2"	39.5"	0.0"
VELOCITY (fps)	2300	2038	1798	1582	1384	1219	1096
ENERGY (ft. lbs.)	1022	802	624	484	370	287	232
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.2"	-25.6"	-58.0"	-108.3"	-180.5"
TRAJ: 200 yd. zero	-1.5"	3.6"	0.0"	-14.8"	-43.6"	-90.2"	-158.9"
TRAJ: 300 yd. zero	-1.5"	8.6"	9.9"	0.0"	-23.7"	-65.4"	-129.2"
TRAJ: 400 yd. zero	-1.5"	14.5"	21.8"	17.8"	0.0"	-35.7"	-93.5"
TRAJ: 500 yd. zero	-1.5"	21.7"	36.1"	39.3"	28.6"	0.0"	-50.6"
TRAJ: 600 yd. zero	-1.5"	30.1"	53.0"	64.6"	62.4"	42.2"	0.0"
VELOCITY (fps)	2200	1946	1714	1499	1312	1166	1059
ENERGY (ft. lbs.)	935	732	568	434	333	263	217
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.9"	-28.0"	-63.7"	-119.5"	-199.3"
TRAJ: 200 yd. zero	-1.5"	4.0"	0.0"	-16.1"	-47.7"	-99.5"	-175.4"
TRAJ: 300 yd. zero	-1.5"	9.4"	10.7"	0.0"	-26.2"	-72.6"	-143.2"
TRAJ: 400 yd. zero	-1.5"	15.9"	23.9"	19.7"	0.0"	-39.8"	-103.8"
TRAJ: 500 yd. zero	-1.5"	23.9"	39.8"	43.6"	31.9"	0.0"	-55.9"
TRAJ: 600 yd. zero	-1.5"	33.2"	58.5"	71.6"	69.2"	46.6"	0.0"
VELOCITY (fps)	2100	1854	1633	1428	1254	1125	1030
ENERGY (ft. lbs.)	852	664	515	394	304	245	205
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.9"	-30.9"	-70.3"	-131.7"	-218.4"
TRAJ: 200 yd. zero	-1.5"	4.5"	0.0"	-17.5"	-52.4"	-109.3"	-191.5"
TRAJ: 300 yd. zero	-1.5"	10.3"	11.7"	0.0"	-29.0"	-80.1"	-156.4"
TRAJ: 400 yd. zero	-1.5"	17.6"	26.2"	21.8"	0.0"	-43.7"	-112.8"
TRAJ: 500 yd. zero	-1.5"	26.4"	43.8"	48.1"	35.0"	0.0"	-60.3"
TRAJ: 600 yd. zero	-1.5"	36.4"	63.9"	78.2"	75.2"	50.3"	0.0"

### 25 CALIBER (.257" Dia.) 100 GRAIN SPIRE POINT

SECTIONAL DENSITY: .216 BALLISTIC COEFFICIENT: .336

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3281	2978	2691	2421	2171	1940
ENERGY (ft. lbs.)	2878	2391	1969	1608	1302	1047	836
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.5"	-18.1"	-35.1"	-59.5"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-4.9"	-14.6"	-30.6"	-54.1"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.3"	0.0"	-8.0"	-22.4"	-44.3"
TRAJ: 400 yd. zero	-1.5"	4.5"	7.3"	6.1"	0.0"	-12.3"	-32.2"
TRAJ: 500 yd. zero	-1.5"	7.0"	12.3"	13.5"	9.9"	0.0"	-17.4"
TRAJ: 600 yd. zero	-1.5"	9.9"	18.1"	22.2"	21.5"	14.5"	0.0"
VELOCITY (fps)	3500	3186	2888	2606	2342	2098	1872
ENERGY (ft. lbs.)	2721	2254	1852	1508	1218	978	778
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.2"	-19.6"	-37.4"	-63.6"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.2"	-15.7"	-32.5"	-57.7"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.5"	0.0"	-8.6"	-23.7"	-47.1"
TRAJ: 400 yd. zero	-1.5"	4.9"	7.9"	6.5"	0.0"	-12.8"	-34.1"
TRAJ: 500 yd. zero	-1.5"	7.5"	13.0"	14.2"	10.3"	0.0"	-18.6"
TRAJ: 600 yd. zero	-1.5"	10.6"	19.2"	23.6"	22.8"	15.6"	0.0"
VELOCITY (fps)	3400	3091	2798	2521	2264	2025	1805
ENERGY (ft. lbs.)	2568	2122	1739	1412	1138	911	724
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-8.9"	-21.3"	-40.5"	-68.7"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.6"	-16.9"	-35.0"	-62.1"
TRAJ: 300 yd. zero	-1.5"	3.0"	3.8"	0.0"	-9.3"	-25.5"	-50.8"
TRAJ: 400 yd. zero	-1.5"	5.3"	8.5"	7.0"	0.0"	-13.8"	-36.7"
TRAJ: 500 yd. zero	-1.5"	8.1"	14.0"	15.3"	11.1"	0.0"	-20.1"
TRAJ: 600 yd. zero	-1.5"	11.5"	20.7"	25.4"	24.5"	16.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2996	2708	2437	2186	1954	1739
ENERGY (ft. lbs.)	2419	1994	1629	1319	1061	848	672
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.8"	- 23.1"	- 43.9"	- 73.7"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 6.1"	- 18.2"	- 37.8"	- 66.4"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.1"	0.0"	- 10.1"	- 27.6"	- 54.1"
TRAJ: 400 yd. zero	- 1.5"	5.8"	9.1"	7.6"	0.0"	- 14.9"	- 39.0"
TRAJ: 500 yd. zero	- 1.5"	8.8"	15.1"	16.6"	12.0"	0.0"	- 21.0"
TRAJ: 600 yd. zero	- 1.5"	12.3"	22.1"	27.1"	26.0"	17.5"	0.0"
VELOCITY (fps)	3200	2901	2619	2354	2109	1882	1675
ENERGY (ft. lbs.)	2274	1869	1523	1231	988	787	623
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 10.5"	- 24.9"	- 47.3"	- 79.7"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.4"	- 19.5"	- 40.6"	- 71.6"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.3"	0.0"	- 10.9"	- 29.8"	- 58.7"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.8"	8.2"	0.0"	- 16.1"	- 42.3"
TRAJ: 500 yd. zero	- 1.5"	9.5"	16.2"	17.9"	12.9"	0.0"	- 22.9"
TRAJ: 600 yd. zero	- 1.5"	13.3"	23.9"	29.4"	28.2"	19.1"	0.0"
VELOCITY (fps)	3100	2807	2529	2271	2032	1812	1612
ENERGY (ft. lbs.)	2134	1749	1421	1146	917	729	577
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 11.5"	- 26.9"	- 51.1"	- 85.6"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 7.0"	- 20.8"	- 43.6"	- 76.5"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.7"	0.0"	- 11.4"	- 31.8"	- 62.5"
TRAJ: 400 yd. zero	- 1.5"	6.7"	10.4"	8.6"	0.0"	- 17.5"	- 45.2"
TRAJ: 500 yd. zero	- 1.5"	10.2"	17.4"	19.1"	14.0"	0.0"	- 24.2"
TRAJ: 600 yd. zero	- 1.5"	14.3"	25.5"	31.3"	30.2"	20.2"	0.0"
VELOCITY (fps)	3000	2712	2441	2189	1957	1742	1550
ENERGY (ft. lbs.)	1999	1633	1323	1065	850	674	534
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.7"	- 29.4"	- 55.3"	- 93.0"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.6"	- 22.7"	- 46.8"	- 82.9"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.1"	0.0"	- 12.4"	- 34.0"	- 67.5"
TRAJ: 400 yd. zero	- 1.5"	7.4"	11.4"	9.4"	0.0"	- 18.4"	- 48.8"
TRAJ: 500 yd. zero	- 1.5"	11.1"	18.8"	20.4"	14.8"	0.0"	- 26.6"
TRAJ: 600 yd. zero	- 1.5"	15.5"	27.6"	33.8"	32.6"	22.2"	0.0"
VELOCITY (fps)	2900	2617	2353	2108	1881	1674	1480
ENERGY (ft. lbs.)	1868	1522	1230	987	786	623	486
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 13.8"	- 32.0"	- 60.3"	- 100.8"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.4"	- 24.8"	- 51.2"	- 89.9"
TRAJ: 300 yd. zero	- 1.5"	4.6"	5.6"	0.0"	- 13.6"	- 37.2"	- 73.1"
TRAJ: 400 yd. zero	- 1.5"	8.0"	12.4"	10.2"	0.0"	- 20.2"	- 52.6"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.5"	22.4"	16.2"	0.0"	- 28.3"
TRAJ: 600 yd. zero	- 1.5"	16.8"	30.0"	36.6"	35.1"	23.6"	0.0"
VELOCITY (fps)	2800	2523	2266	2027	1807	1608	1421
ENERGY (ft. lbs.)	1741	1414	1140	913	725	574	448
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.0"	- 15.0"	- 34.9"	- 65.2"	- 109.0"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.9"	- 26.7"	- 55.0"	- 96.8"
TRAJ: 300 yd. zero	- 1.5"	5.0"	5.9"	0.0"	- 14.8"	- 40.2"	- 79.0"
TRAJ: 400 yd. zero	- 1.5"	8.7"	13.4"	11.2"	0.0"	- 21.6"	- 56.6"
TRAJ: 500 yd. zero	- 1.5"	13.1"	22.0"	24.1"	17.3"	0.0"	- 30.7"
TRAJ: 600 yd. zero	- 1.5"	18.2"	32.3"	39.5"	37.8"	25.6"	0.0"
VELOCITY (fps)	2700	2430	2179	1947	1734	1542	1363
ENERGY (ft. lbs.)	1619	1311	1055	842	667	528	413
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.5"	- 16.6"	- 38.0"	- 71.6"	- 119.3"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 9.8"	- 28.8"	- 60.1"	- 105.6"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.5"	0.0"	- 15.8"	- 43.8"	- 86.0"
TRAJ: 400 yd. zero	- 1.5"	9.5"	14.4"	11.9"	0.0"	- 24.0"	- 62.2"
TRAJ: 500 yd. zero	- 1.5"	14.3"	24.1"	26.3"	19.2"	0.0"	- 33.4"
TRAJ: 600 yd. zero	- 1.5"	19.9"	35.2"	43.0"	41.5"	27.9"	0.0"
VELOCITY (fps)	2600	2337	2093	1868	1662	1469	1300
ENERGY (ft. lbs.)	1501	1213	973	775	613	479	375
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 18.2"	- 41.8"	- 78.1"	- 130.6"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 10.8"	- 31.9"	- 65.7"	- 115.7"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.2"	0.0"	- 17.5"	- 47.7"	- 94.1"
TRAJ: 400 yd. zero	- 1.5"	10.5"	16.0"	13.2"	0.0"	- 25.7"	- 67.7"
TRAJ: 500 yd. zero	- 1.5"	15.6"	26.3"	28.6"	20.6"	0.0"	- 36.8"
TRAJ: 600 yd. zero	- 1.5"	21.8"	38.6"	47.1"	45.2"	30.7"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2244	2007	1789	1591	1406	1248
ENERGY (ft. lbs.)	1388	1119	895	710	562	439	346
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.6"	- 19.9"	- 45.5"	- 84.6"	- 142.0"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 11.5"	- 34.3"	- 70.6"	- 125.2"
TRAJ: 300 yd. zero	- 1.5"	6.7"	7.7"	0.0"	- 18.9"	- 51.3"	- 102.1"
TRAJ: 400 yd. zero	- 1.5"	11.4"	17.2"	14.2"	0.0"	- 27.6"	- 73.7"
TRAJ: 500 yd. zero	- 1.5"	16.9"	28.3"	30.8"	22.2"	0.0"	- 40.4"
TRAJ: 600 yd. zero	- 1.5"	23.7"	41.8"	51.1"	49.1"	33.7"	0.0"
VELOCITY (fps)	2400	2151	1922	1710	1512	1337	1194
ENERGY (ft. lbs.)	1279	1028	820	650	508	397	316
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.0"	- 22.0"	- 49.9"	- 93.5"	- 156.8"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 12.9"	- 37.7"	- 78.3"	- 138.5"
TRAJ: 300 yd. zero	- 1.5"	7.3"	8.6"	0.0"	- 20.5"	- 56.8"	- 112.7"
TRAJ: 400 yd. zero	- 1.5"	12.5"	18.9"	15.4"	0.0"	- 31.1"	- 81.9"
TRAJ: 500 yd. zero	- 1.5"	18.7"	31.3"	34.1"	24.9"	0.0"	- 44.5"
TRAJ: 600 yd. zero	- 1.5"	26.1"	46.2"	56.4"	54.6"	37.1"	0.0"

**25 CALIBER (.257" Dia.) 117 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .253 BALLISTIC COEFFICIENT: .238

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2876	2484	2130	1813	1537	1297
ENERGY (ft. lbs.)	2830	2149	1603	1179	854	614	437
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.3"	- 27.7"	- 55.0"	- 97.1"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 7.1"	- 22.1"	- 48.0"	- 88.6"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.7"	0.0"	- 12.6"	- 36.2"	- 74.4"
TRAJ: 400 yd. zero	- 1.5"	6.9"	11.1"	9.5"	0.0"	- 20.4"	- 55.5"
TRAJ: 500 yd. zero	- 1.5"	11.0"	19.2"	21.7"	16.3"	0.0"	- 30.9"
TRAJ: 600 yd. zero	- 1.5"	16.2"	29.6"	37.2"	37.0"	25.8"	0.0"
VELOCITY (fps)	3200	2783	2399	2054	1746	1470	1245
ENERGY (ft. lbs.)	2661	2013	1496	1096	792	562	403
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 12.4"	- 30.0"	- 59.3"	- 104.6"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 7.8"	- 23.9"	- 51.6"	- 95.4"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.2"	0.0"	- 13.5"	- 38.6"	- 79.8"
TRAJ: 400 yd. zero	- 1.5"	7.5"	12.0"	10.1"	0.0"	- 21.7"	- 59.6"
TRAJ: 500 yd. zero	- 1.5"	11.9"	20.7"	23.2"	17.4"	0.0"	- 33.5"
TRAJ: 600 yd. zero	- 1.5"	17.4"	31.8"	39.9"	39.7"	27.9"	0.0"
VELOCITY (fps)	3100	2690	2315	1979	1680	1415	1203
ENERGY (ft. lbs.)	2497	1881	1393	1018	733	520	376
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 13.4"	- 32.4"	- 63.6"	- 112.1"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 8.3"	- 25.6"	- 55.2"	- 102.0"
TRAJ: 300 yd. zero	- 1.5"	4.5"	5.6"	0.0"	- 14.5"	- 41.2"	- 85.3"
TRAJ: 400 yd. zero	- 1.5"	8.1"	12.8"	10.9"	0.0"	- 23.1"	- 63.5"
TRAJ: 500 yd. zero	- 1.5"	12.7"	22.1"	24.8"	18.5"	0.0"	- 35.8"
TRAJ: 600 yd. zero	- 1.5"	18.7"	34.0"	42.7"	42.4"	29.8"	0.0"
VELOCITY (fps)	3000	2598	2232	1904	1615	1361	1166
ENERGY (ft. lbs.)	2339	1754	1295	942	678	481	353
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.7"	- 35.3"	- 69.1"	- 121.3"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 9.0"	- 27.7"	- 59.8"	- 109.9"
TRAJ: 300 yd. zero	- 1.5"	4.9"	6.0"	0.0"	- 15.6"	- 44.6"	- 91.9"
TRAJ: 400 yd. zero	- 1.5"	8.8"	13.9"	11.8"	0.0"	- 25.0"	- 68.4"
TRAJ: 500 yd. zero	- 1.5"	13.8"	23.9"	26.8"	20.0"	0.0"	- 38.3"
TRAJ: 600 yd. zero	- 1.5"	20.2"	36.7"	46.0"	45.6"	32.0"	0.0"
VELOCITY (fps)	2900	2506	2150	1831	1552	1309	1133
ENERGY (ft. lbs.)	2185	1632	1201	871	626	445	333
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.1"	- 15.9"	- 38.3"	- 75.2"	- 131.7"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.7"	- 29.9"	- 64.8"	- 119.1"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.5"	0.0"	- 17.0"	- 48.6"	- 99.7"
TRAJ: 400 yd. zero	- 1.5"	9.6"	15.0"	12.8"	0.0"	- 27.3"	- 74.2"
TRAJ: 500 yd. zero	- 1.5"	15.1"	25.9"	29.2"	21.9"	0.0"	- 41.4"
TRAJ: 600 yd. zero	- 1.5"	22.0"	39.7"	49.9"	49.5"	34.5"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2415	2068	1758	1481	1253	1092
ENERGY (ft. lbs.)	2037	1515	1111	803	570	408	310
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-17.7"	-41.9"	-82.4"	-143.6"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-10.7"	-32.7"	-70.8"	-129.8"
TRAJ: 300 yd. zero	-1.5"	5.9"	7.2"	0.0"	-18.3"	-52.8"	-108.2"
TRAJ: 400 yd. zero	-1.5"	10.5"	16.4"	13.8"	0.0"	-29.9"	-80.7"
TRAJ: 500 yd. zero	-1.5"	16.5"	28.3"	31.7"	24.0"	0.0"	-44.7"
TRAJ: 600 yd. zero	-1.5"	23.9"	43.3"	54.1"	53.8"	37.3"	0.0"
VELOCITY (fps)	2700	2324	1987	1687	1421	1208	1064
ENERGY (ft. lbs.)	1894	1404	1026	739	524	379	294
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.0"	-19.3"	-45.9"	-89.8"	-155.6"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-11.7"	-35.7"	-77.1"	-140.3"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.8"	0.0"	-20.0"	-57.6"	-116.8"
TRAJ: 400 yd. zero	-1.5"	11.5"	17.9"	15.1"	0.0"	-32.4"	-86.7"
TRAJ: 500 yd. zero	-1.5"	18.0"	30.9"	34.6"	26.0"	0.0"	-47.7"
TRAJ: 600 yd. zero	-1.5"	25.9"	46.8"	58.4"	57.8"	39.8"	0.0"
VELOCITY (fps)	2600	2234	1906	1617	1362	1167	1038
ENERGY (ft. lbs.)	1757	1297	944	679	482	354	280
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.6"	-20.9"	-49.9"	-97.0"	-167.1"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.5"	-38.6"	-83.0"	-150.2"
TRAJ: 300 yd. zero	-1.5"	7.0"	8.3"	0.0"	-22.0"	-62.1"	-125.2"
TRAJ: 400 yd. zero	-1.5"	12.5"	19.3"	16.5"	0.0"	-34.6"	-92.1"
TRAJ: 500 yd. zero	-1.5"	19.4"	33.2"	37.3"	27.7"	0.0"	-50.6"
TRAJ: 600 yd. zero	-1.5"	27.9"	50.1"	62.6"	61.5"	42.2"	0.0"
VELOCITY (fps)	2500	2144	1826	1548	1306	1131	1014
ENERGY (ft. lbs.)	1624	1195	866	623	443	332	267
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.2"	-23.1"	-54.5"	-106.4"	-182.4"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-13.8"	-42.0"	-90.8"	-163.7"
TRAJ: 300 yd. zero	-1.5"	7.7"	9.2"	0.0"	-23.6"	-67.8"	-136.1"
TRAJ: 400 yd. zero	-1.5"	13.6"	21.0"	17.7"	0.0"	-38.2"	-100.6"
TRAJ: 500 yd. zero	-1.5"	21.3"	36.4"	40.7"	30.6"	0.0"	-54.7"
TRAJ: 600 yd. zero	-1.5"	30.4"	54.6"	68.1"	67.1"	45.6"	0.0"
VELOCITY (fps)	2400	2055	1746	1471	1245	1088	984
ENERGY (ft. lbs.)	1497	1097	792	562	403	307	252
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.9"	-25.5"	-60.4"	-116.3"	-197.7"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-15.1"	-46.6"	-99.0"	-176.9"
TRAJ: 300 yd. zero	-1.5"	8.5"	10.1"	0.0"	-28.4"	-73.7"	-146.6"
TRAJ: 400 yd. zero	-1.5"	15.1"	23.3"	19.8"	0.0"	-40.7"	-107.0"
TRAJ: 500 yd. zero	-1.5"	23.3"	39.6"	44.3"	32.6"	0.0"	-58.0"
TRAJ: 600 yd. zero	-1.5"	33.0"	59.0"	73.3"	71.4"	48.4"	0.0"
VELOCITY (fps)	2300	1965	1668	1405	1196	1057	962
ENERGY (ft. lbs.)	1375	1003	723	513	372	291	241
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.7"	-28.2"	-66.6"	-127.7"	-216.4"
TRAJ: 200 yd. zero	-1.5"	3.9"	0.0"	-16.6"	-51.0"	-108.3"	-193.1"
TRAJ: 300 yd. zero	-1.5"	9.4"	11.1"	0.0"	-28.8"	-80.6"	-159.8"
TRAJ: 400 yd. zero	-1.5"	16.7"	25.5"	21.7"	0.0"	-44.4"	-116.4"
TRAJ: 500 yd. zero	-1.5"	25.6"	43.3"	48.4"	35.6"	0.0"	-63.0"
TRAJ: 600 yd. zero	-1.5"	36.1"	64.4"	79.9"	77.7"	52.6"	0.0"

**25 CALIBER (.257" Dia.) 120 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .260 BALLISTIC COEFFICIENT: .388

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3036	2784	2544	2318	2107	1910
ENERGY (ft. lbs.)	2902	2456	2065	1725	1432	1184	972
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.2"	-21.7"	-40.9"	-68.1"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.6"	-17.0"	-35.0"	-61.0"
TRAJ: 300 yd. zero	-1.5"	3.1"	3.8"	0.0"	-9.4"	-25.5"	-49.6"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.5"	7.1"	0.0"	-13.7"	-35.4"
TRAJ: 500 yd. zero	-1.5"	8.2"	14.0"	15.4"	11.0"	0.0"	-18.9"
TRAJ: 600 yd. zero	-1.5"	11.4"	20.3"	24.8"	23.7"	15.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2940	2693	2458	2238	2032	1840
ENERGY (ft. lbs.)	2729	2304	1933	1610	1335	1101	902
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.0"	- 23.5"	- 44.2"	- 73.4"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.1"	- 18.3"	- 37.7"	- 65.6"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.1"	0.0"	- 10.1"	- 27.5"	- 53.4"
TRAJ: 400 yd. zero	- 1.5"	5.9"	9.2"	7.6"	0.0"	- 14.8"	- 38.1"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.1"	16.5"	11.8"	0.0"	- 20.3"
TRAJ: 600 yd. zero	- 1.5"	12.2"	21.9"	26.7"	25.4"	17.0"	0.0"
VELOCITY (fps)	3100	2845	2602	2373	2158	1958	1771
ENERGY (ft. lbs.)	2561	2157	1804	1501	1241	1021	836
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 10.9"	- 25.2"	- 47.4"	- 78.9"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.6"	- 19.4"	- 40.2"	- 70.3"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.4"	0.0"	- 10.6"	- 29.2"	- 57.0"
TRAJ: 400 yd. zero	- 1.5"	6.3"	9.7"	8.0"	0.0"	- 15.9"	- 41.1"
TRAJ: 500 yd. zero	- 1.5"	9.5"	16.1"	17.6"	12.8"	0.0"	- 21.9"
TRAJ: 600 yd. zero	- 1.5"	13.2"	23.4"	28.5"	27.4"	18.3"	0.0"
VELOCITY (fps)	3000	2750	2512	2288	2079	1884	1703
ENERGY (ft. lbs.)	2399	2015	1681	1395	1152	946	773
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 11.9"	- 27.4"	- 51.5"	- 85.8"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.1"	- 21.1"	- 43.6"	- 76.2"
TRAJ: 300 yd. zero	- 1.5"	4.0"	4.8"	0.0"	- 11.5"	- 31.6"	- 61.8"
TRAJ: 400 yd. zero	- 1.5"	6.9"	10.6"	8.6"	0.0"	- 17.2"	- 44.5"
TRAJ: 500 yd. zero	- 1.5"	10.3"	17.4"	19.0"	13.8"	0.0"	- 23.9"
TRAJ: 600 yd. zero	- 1.5"	14.3"	25.4"	30.9"	29.7"	19.9"	0.0"
VELOCITY (fps)	2900	2654	2422	2204	2001	1811	1636
ENERGY (ft. lbs.)	2241	1878	1563	1295	1067	874	714
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.1"	- 30.0"	- 56.2"	- 92.6"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.8"	- 22.9"	- 47.3"	- 81.9"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.2"	0.0"	- 12.4"	- 34.2"	- 66.2"
TRAJ: 400 yd. zero	- 1.5"	7.5"	11.5"	9.4"	0.0"	- 18.6"	- 47.5"
TRAJ: 500 yd. zero	- 1.5"	11.2"	18.9"	20.6"	14.9"	0.0"	- 25.1"
TRAJ: 600 yd. zero	- 1.5"	15.4"	27.3"	33.1"	31.7"	21.0"	0.0"
VELOCITY (fps)	2800	2559	2333	2121	1923	1738	1571
ENERGY (ft. lbs.)	2090	1746	1450	1199	985	806	658
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.5"	- 32.8"	- 60.7"	- 100.5"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.5"	- 24.9"	- 50.7"	- 88.6"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.7"	0.0"	- 13.5"	- 36.5"	- 71.5"
TRAJ: 400 yd. zero	- 1.5"	8.2"	12.5"	10.2"	0.0"	- 19.5"	- 51.2"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.3"	21.9"	15.7"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	16.8"	29.5"	35.8"	34.1"	23.1"	0.0"
VELOCITY (fps)	2700	2465	2244	2038	1846	1668	1498
ENERGY (ft. lbs.)	1943	1619	1342	1107	908	742	598
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.4"	- 16.0"	- 36.1"	- 66.7"	- 110.0"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 9.3"	- 27.2"	- 55.6"	- 96.6"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.2"	0.0"	- 14.7"	- 40.0"	- 77.9"
TRAJ: 400 yd. zero	- 1.5"	9.0"	13.6"	11.1"	0.0"	- 21.5"	- 55.8"
TRAJ: 500 yd. zero	- 1.5"	13.3"	22.2"	24.0"	17.3"	0.0"	- 29.9"
TRAJ: 600 yd. zero	- 1.5"	18.3"	32.2"	39.0"	37.2"	25.0"	0.0"
VELOCITY (fps)	2600	2371	2156	1956	1769	1599	1435
ENERGY (ft. lbs.)	1802	1498	1239	1020	834	681	549
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.3"	- 39.3"	- 73.0"	- 120.1"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.2"	- 29.8"	- 61.1"	- 105.8"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.8"	0.0"	- 16.1"	- 44.0"	- 85.3"
TRAJ: 400 yd. zero	- 1.5"	9.8"	14.9"	12.1"	0.0"	- 23.9"	- 61.1"
TRAJ: 500 yd. zero	- 1.5"	14.6"	24.5"	26.5"	19.1"	0.0"	- 32.4"
TRAJ: 600 yd. zero	- 1.5"	20.0"	35.3"	42.7"	40.7"	27.0"	0.0"
VELOCITY (fps)	2500	2277	2069	1874	1694	1531	1374
ENERGY (ft. lbs.)	1666	1382	1141	936	765	625	503
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.3"	- 18.8"	- 43.0"	- 79.2"	- 130.1"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 10.8"	- 32.3"	- 65.8"	- 114.1"
TRAJ: 300 yd. zero	- 1.5"	6.3"	7.2"	0.0"	- 17.8"	- 47.8"	- 92.4"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.2"	13.4"	0.0"	- 25.4"	- 65.6"
TRAJ: 500 yd. zero	- 1.5"	15.8"	26.4"	28.7"	20.4"	0.0"	- 35.1"
TRAJ: 600 yd. zero	- 1.5"	21.7"	38.1"	46.2"	43.8"	29.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2184	1981	1793	1620	1455	1307
ENERGY (ft. lbs.)	1535	1271	1046	857	700	564	455
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-20.9"	-47.1"	-86.8"	-142.6"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-11.9"	-35.1"	-71.8"	-124.6"
TRAJ: 300 yd. zero	-1.5"	7.0"	8.0"	0.0"	-19.1"	-51.8"	-100.6"
TRAJ: 400 yd. zero	-1.5"	11.8"	17.6"	14.4"	0.0"	-27.8"	-71.8"
TRAJ: 500 yd. zero	-1.5"	17.4"	28.7"	31.1"	22.3"	0.0"	-38.4"
TRAJ: 600 yd. zero	-1.5"	23.8"	41.6"	50.3"	47.9"	32.0"	0.0"
VELOCITY (fps)	2300	2090	1894	1712	1547	1389	1252
ENERGY (ft. lbs.)	1410	1164	956	781	638	514	418
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.7"	-23.5"	-52.0"	-95.5"	-156.9"
TRAJ: 200 yd. zero	-1.5"	3.4"	0.0"	-13.3"	-38.5"	-78.6"	-136.6"
TRAJ: 300 yd. zero	-1.5"	7.8"	8.9"	0.0"	-20.6"	-56.3"	-109.8"
TRAJ: 400 yd. zero	-1.5"	13.0"	19.3"	15.5"	0.0"	-30.5"	-78.8"
TRAJ: 500 yd. zero	-1.5"	19.1"	31.5"	33.8"	24.4"	0.0"	-42.2"
TRAJ: 600 yd. zero	-1.5"	26.2"	45.6"	54.9"	52.6"	35.2"	0.0"

**6.5 MM (.264" Dia.) 100 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .205 BALLISTIC COEFFICIENT: .346

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3290	2995	2715	2451	2206	1979
ENERGY (ft. lbs.)	2878	2404	1992	1637	1335	1081	869
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.7"	-7.3"	-17.8"	-34.4"	-58.1"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-4.7"	-14.3"	-30.0"	-52.9"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.2"	0.0"	-7.9"	-22.0"	-43.3"
TRAJ: 400 yd. zero	-1.5"	4.5"	7.2"	6.0"	0.0"	-12.1"	-31.3"
TRAJ: 500 yd. zero	-1.5"	6.9"	12.0"	13.3"	9.7"	0.0"	-16.8"
TRAJ: 600 yd. zero	-1.5"	9.7"	17.6"	21.7"	20.9"	14.0"	0.0"
VELOCITY (fps)	3500	3195	2905	2630	2372	2132	1910
ENERGY (ft. lbs.)	2721	2267	1874	1536	1249	1010	810
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.1"	-19.4"	-36.9"	-62.3"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.1"	-15.4"	-31.8"	-56.3"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.4"	0.0"	-8.5"	-23.3"	-46.0"
TRAJ: 400 yd. zero	-1.5"	4.9"	7.7"	6.4"	0.0"	-12.6"	-33.2"
TRAJ: 500 yd. zero	-1.5"	7.4"	12.8"	14.0"	10.1"	0.0"	-18.0"
TRAJ: 600 yd. zero	-1.5"	10.4"	18.8"	23.0"	22.1"	15.1"	0.0"
VELOCITY (fps)	3400	3100 †	2814	2545	2293	2059	1842
ENERGY (ft. lbs.)	2568	2134	1759	1438	1167	941	754
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-8.8"	-21.0"	-39.8"	-67.2"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.5"	-16.5"	-34.2"	-60.5"
TRAJ: 300 yd. zero	-1.5"	3.0"	3.7"	0.0"	-9.2"	-25.1"	-49.5"
TRAJ: 400 yd. zero	-1.5"	5.3"	8.3"	6.9"	0.0"	-13.5"	-35.7"
TRAJ: 500 yd. zero	-1.5"	8.0"	13.7"	15.1"	10.8"	0.0"	-19.4"
TRAJ: 600 yd. zero	-1.5"	11.2"	20.2"	24.8"	23.8"	16.2"	0.0"
VELOCITY (fps)	3300	3005	2724	2460	2214	1986	1775
ENERGY (ft. lbs.)	2419	2005	1648	1344	1089	876	700
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.6"	-22.8"	-43.1"	-72.7"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.9"	-17.9"	-36.9"	-65.3"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-9.9"	-27.0"	-53.4"
TRAJ: 400 yd. zero	-1.5"	5.7"	9.0"	7.5"	0.0"	-14.6"	-38.4"
TRAJ: 500 yd. zero	-1.5"	8.6"	14.8"	16.3"	11.7"	0.0"	-20.9"
TRAJ: 600 yd. zero	-1.5"	12.1"	21.8"	26.7"	25.7"	17.5"	0.0"
VELOCITY (fps)	3200	2910	2634	2376	2136	1914	1709
ENERGY (ft. lbs.)	2274	1880	1541	1254	1014	814	649
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.5"	-24.5"	-46.4"	-77.6"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.4"	-19.0"	-39.5"	-69.4"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.3"	0.0"	-10.4"	-28.8"	-56.5"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.5"	7.8"	0.0"	-15.7"	-40.8"
TRAJ: 500 yd. zero	-1.5"	9.3"	15.8"	17.3"	12.6"	0.0"	-21.9"
TRAJ: 600 yd. zero	-1.5"	12.9"	23.2"	28.3"	27.3"	18.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2815	2545	2293	2059	1842	1645
ENERGY (ft. lbs.)	2134	1760	1438	1168	942	754	601
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.3"	-26.5"	-50.2"	-84.2"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.0"	-20.6"	-42.8"	-75.4"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.3"	-31.2"	-61.4"
TRAJ: 400 yd. zero	-1.5"	6.6"	10.3"	8.5"	0.0"	-17.0"	-44.4"
TRAJ: 500 yd. zero	-1.5"	10.0"	17.2"	18.7"	13.6"	0.0"	-24.0"
TRAJ: 600 yd. zero	-1.5"	14.0"	25.2"	30.7"	29.7"	20.0"	0.0"
VELOCITY (fps)	3000	2720	2456	2210	1983	1772	1582
ENERGY (ft. lbs.)	1999	1643	1340	1085	873	697	556
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.5"	-28.9"	-54.7"	-92.1"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.6"	-22.4"	-46.6"	-82.3"
TRAJ: 300 yd. zero	-1.5"	4.2"	5.1"	0.0"	-12.2"	-33.8"	-67.0"
TRAJ: 400 yd. zero	-1.5"	7.2"	11.2"	9.2"	0.0"	-18.5"	-48.6"
TRAJ: 500 yd. zero	-1.5"	11.0"	18.6"	20.3"	14.8"	0.0"	-26.4"
TRAJ: 600 yd. zero	-1.5"	15.4"	27.5"	33.5"	32.4"	22.0"	0.0"
VELOCITY (fps)	2900	2625	2368	2128	1907	1703	1510
ENERGY (ft. lbs.)	1868	1531	1245	1006	807	644	506
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.5"	-31.4"	-58.8"	-98.6"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.0"	-24.1"	-49.7"	-87.7"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-13.3"	-36.2"	-71.5"
TRAJ: 400 yd. zero	-1.5"	7.9"	12.1"	10.0"	0.0"	-19.5"	-51.4"
TRAJ: 500 yd. zero	-1.5"	11.8"	19.9"	21.8"	15.7"	0.0"	-28.0"
TRAJ: 600 yd. zero	-1.5"	16.4"	29.2"	35.8"	34.3"	23.3"	0.0"
VELOCITY (fps)	2800	2531	2280	2047	1831	1635	1450
ENERGY (ft. lbs.)	1741	1423	1155	931	745	594	467
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.0"	-34.6"	-64.8"	-108.2"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-26.4"	-54.6"	-95.9"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.9"	0.0"	-14.6"	-39.8"	-78.2"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.2"	11.0"	0.0"	-21.6"	-56.3"
TRAJ: 500 yd. zero	-1.5"	13.0"	21.8"	23.9"	17.3"	0.0"	-30.4"
TRAJ: 600 yd. zero	-1.5"	18.0"	32.0"	39.1"	37.6"	25.4"	0.0"
VELOCITY (fps)	2700	2437	2193	1966	1757	1569	1391
ENERGY (ft. lbs.)	1619	1319	1068	859	686	547	430
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.3"	-37.2"	-69.6"	-116.5"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.7"	-28.4"	-58.5"	-103.3"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.5"	0.0"	-15.4"	-42.4"	-83.8"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.2"	11.6"	0.0"	-23.0"	-60.6"
TRAJ: 500 yd. zero	-1.5"	13.9"	23.4"	25.4"	18.5"	0.0"	-32.9"
TRAJ: 600 yd. zero	-1.5"	19.4"	34.4"	41.9"	40.5"	27.5"	0.0"
VELOCITY (fps)	2600	2344	2107	1886	1684	1494	1325
ENERGY (ft. lbs.)	1501	1220	986	790	630	496	390
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-18.1"	-41.3"	-78.9"	-128.3"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-10.7"	-31.3"	-64.4"	-113.4"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.1"	0.0"	-17.1"	-46.6"	-91.9"
TRAJ: 400 yd. zero	-1.5"	10.3"	15.7"	12.8"	0.0"	-25.2"	-66.3"
TRAJ: 500 yd. zero	-1.5"	15.4"	25.8"	28.0"	20.2"	0.0"	-36.0"
TRAJ: 600 yd. zero	-1.5"	21.4"	37.8"	46.0"	44.2"	30.0"	0.0"
VELOCITY (fps)	2500	2251	2020	1807	1613	1430	1272
ENERGY (ft. lbs.)	1388	1126	907	725	578	454	359
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.6"	-19.8"	-44.8"	-83.6"	-139.7"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.4"	-33.6"	-69.6"	-122.8"
TRAJ: 300 yd. zero	-1.5"	6.6"	7.6"	0.0"	-18.4"	-50.6"	-100.0"
TRAJ: 400 yd. zero	-1.5"	11.2"	16.8"	13.8"	0.0"	-27.6"	-72.4"
TRAJ: 500 yd. zero	-1.5"	16.7"	27.9"	30.4"	22.1"	0.0"	-39.2"
TRAJ: 600 yd. zero	-1.5"	23.3"	41.0"	50.0"	48.3"	32.7"	0.0"
VELOCITY (fps)	2400	2158	1934	1728	1543	1368	1221
ENERGY (ft. lbs.)	1279	1035	831	663	529	416	331
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-21.8"	-49.8"	-92.0"	-152.9"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-12.7"	-37.7"	-76.8"	-134.7"
TRAJ: 300 yd. zero	-1.5"	7.3"	8.5"	0.0"	-20.7"	-55.6"	-109.2"
TRAJ: 400 yd. zero	-1.5"	12.5"	18.9"	15.6"	0.0"	-29.7"	-78.1"
TRAJ: 500 yd. zero	-1.5"	18.4"	30.7"	33.4"	23.8"	0.0"	-42.5"
TRAJ: 600 yd. zero	-1.5"	25.5"	44.9"	54.6"	52.1"	35.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	2066	1849	1650	1464	1300	1169
ENERGY (ft. lbs.)	1175	948	759	605	476	375	304
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.8"	- 24.1"	- 54.2"	- 100.9"	- 168.5"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 13.8"	- 40.4"	- 83.7"	- 147.9"
TRAJ: 300 yd. zero	- 1.5"	8.1"	9.2"	0.0"	- 22.0"	- 60.8"	- 120.2"
TRAJ: 400 yd. zero	- 1.5"	13.6"	20.2"	16.5"	0.0"	- 33.0"	- 87.1"
TRAJ: 500 yd. zero	- 1.5"	20.2"	33.5"	36.4"	26.5"	0.0"	- 47.4"
TRAJ: 600 yd. zero	- 1.5"	28.1"	49.3"	60.1"	58.1"	39.6"	0.0"
VELOCITY (fps)	2200	1973	1763	1574	1396	1244	1129
ENERGY (ft. lbs.)	1075	865	690	550	433	344	283
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.5"	- 26.4"	- 59.7"	- 110.8"	- 183.3"
TRAJ: 200 yd. zero	- 1.5"	3.8"	0.0"	- 15.1"	- 44.7"	- 91.9"	- 160.7"
TRAJ: 300 yd. zero	- 1.5"	8.8"	10.1"	0.0"	- 24.5"	- 66.7"	- 130.4"
TRAJ: 400 yd. zero	- 1.5"	14.9"	22.4"	18.4"	0.0"	- 36.1"	- 93.7"
TRAJ: 500 yd. zero	- 1.5"	22.2"	36.8"	40.0"	28.9"	0.0"	- 50.3"
TRAJ: 600 yd. zero	- 1.5"	30.6"	53.6"	65.2"	62.5"	42.0"	0.0"
VELOCITY (fps)	2100	1880	1679	1489	1321	1185	1082
ENERGY (ft. lbs.)	979	785	626	492	388	312	260
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.6"	- 29.7"	- 67.1"	- 124.4"	- 205.0"
TRAJ: 200 yd. zero	- 1.5"	4.3"	0.0"	- 16.6"	- 49.7"	- 102.7"	- 178.9"
TRAJ: 300 yd. zero	- 1.5"	9.9"	11.1"	0.0"	- 27.5"	- 74.9"	- 145.6"
TRAJ: 400 yd. zero	- 1.5"	16.8"	24.9"	20.6"	0.0"	- 40.5"	- 104.4"
TRAJ: 500 yd. zero	- 1.5"	24.9"	41.1"	45.0"	32.5"	0.0"	- 55.7"
TRAJ: 600 yd. zero	- 1.5"	34.2"	59.7"	72.8"	69.6"	46.4"	0.0"
VELOCITY (fps)	2000	1788	1596	1415	1260	1140	1049
ENERGY (ft. lbs.)	888	710	566	445	352	289	244
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.7"	- 33.4"	- 75.0"	- 137.8"	- 226.4"
TRAJ: 200 yd. zero	- 1.5"	4.9"	0.0"	- 18.8"	- 55.4"	- 113.3"	- 197.1"
TRAJ: 300 yd. zero	- 1.5"	11.2"	12.6"	0.0"	- 30.3"	- 82.0"	- 159.4"
TRAJ: 400 yd. zero	- 1.5"	18.8"	27.7"	22.8"	0.0"	- 44.0"	- 113.9"
TRAJ: 500 yd. zero	- 1.5"	27.6"	45.4"	49.2"	35.2"	0.0"	- 61.0"
TRAJ: 600 yd. zero	- 1.5"	37.7"	65.7"	79.7"	75.9"	50.9"	0.0"

## 6.5 MM (.264" Dia.) 129 GRAIN SPIRE POINT

SECTIONAL DENSITY: .264 BALLISTIC COEFFICIENT: .415

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3053	2816	2590	2376	2174	1985
ENERGY (ft. lbs.)	3120	2670	2272	1921	1617	1355	1129
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.1"	- 21.2"	- 39.7"	- 65.5"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.6"	- 16.5"	- 33.9"	- 58.5"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.8"	0.0"	- 8.9"	- 24.4"	- 47.1"
TRAJ: 400 yd. zero	- 1.5"	5.3"	8.3"	6.7"	0.0"	- 13.2"	- 33.7"
TRAJ: 500 yd. zero	- 1.5"	8.0"	13.6"	14.7"	10.6"	0.0"	- 17.8"
TRAJ: 600 yd. zero	- 1.5"	10.9"	19.5"	23.6"	22.5"	14.9"	0.0"
VELOCITY (fps)	3200	2957	2724	2503	2294	2098	1913
ENERGY (ft. lbs.)	2934	2505	2126	1794	1508	1261	1049
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 9.9"	- 22.9"	- 42.8"	- 70.5"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.1"	- 17.8"	- 36.4"	- 62.8"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.1"	0.0"	- 9.6"	- 26.2"	- 50.6"
TRAJ: 400 yd. zero	- 1.5"	5.7"	8.9"	7.2"	0.0"	- 14.2"	- 36.1"
TRAJ: 500 yd. zero	- 1.5"	8.6"	14.6"	15.8"	11.4"	0.0"	- 19.1"
TRAJ: 600 yd. zero	- 1.5"	11.8"	21.0"	25.3"	24.1"	15.9"	0.0"
VELOCITY (fps)	3100	2861	2633	2416	2213	2021	1842
ENERGY (ft. lbs.)	2753	2345	1986	1673	1403	1171	972
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 10.8"	- 24.8"	- 46.3"	- 76.0"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.6"	- 19.1"	- 39.2"	- 67.6"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.4"	0.0"	- 10.3"	- 28.2"	- 54.4"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.8"	7.8"	0.0"	- 15.2"	- 38.8"
TRAJ: 500 yd. zero	- 1.5"	9.3"	15.7"	17.0"	12.2"	0.0"	- 20.5"
TRAJ: 600 yd. zero	- 1.5"	12.7"	22.5"	27.2"	25.9"	17.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2766	2542	2331	2132	1946	1771
ENERGY (ft. lbs.)	2579	2191	1851	1556	1302	1085	899
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-11.8"	-26.9"	-50.1"	-82.3"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.1"	-20.7"	-42.3"	-72.9"
TRAJ: 300 yd. zero	-1.5"	3.9"	4.8"	0.0"	-11.2"	-30.4"	-58.8"
TRAJ: 400 yd. zero	-1.5"	6.7"	10.4"	8.4"	0.0"	-18.4"	-41.8"
TRAJ: 500 yd. zero	-1.5"	10.0"	17.0"	18.3"	13.2"	0.0"	-22.1"
TRAJ: 600 yd. zero	-1.5"	13.7"	24.3"	29.3"	27.9"	18.4"	0.0"
VELOCITY (fps)	2900	2670	2451	2246	2052	1871	1702
ENERGY (ft. lbs.)	2410	2042	1722	1445	1207	1003	830
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.4"	-12.9"	-29.4"	-54.5"	-89.5"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.7"	-22.4"	-45.8"	-79.1"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.2"	0.0"	-12.1"	-32.9"	-63.5"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.2"	9.1"	0.0"	-17.7"	-45.4"
TRAJ: 500 yd. zero	-1.5"	10.9"	18.4"	19.8"	14.2"	0.0"	-24.0"
TRAJ: 600 yd. zero	-1.5"	14.9"	26.4"	31.8"	30.3"	20.0"	0.0"
VELOCITY (fps)	2800	2575	2361	2161	1973	1797	1634
ENERGY (ft. lbs.)	2246	1899	1598	1338	1115	925	765
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-14.2"	-32.1"	-59.4"	-97.7"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.4"	-24.4"	-49.8"	-86.1"
TRAJ: 300 yd. zero	-1.5"	4.7"	5.8"	0.0"	-13.1"	-35.6"	-69.2"
TRAJ: 400 yd. zero	-1.5"	8.0"	12.2"	9.9"	0.0"	-19.2"	-49.5"
TRAJ: 500 yd. zero	-1.5"	11.9"	19.9"	21.4"	15.4"	0.0"	-26.3"
TRAJ: 600 yd. zero	-1.5"	16.3"	28.7"	34.8"	33.0"	22.0"	0.0"
VELOCITY (fps)	2700	2480	2272	2077	1894	1724	1568
ENERGY (ft. lbs.)	2089	1782	1479	1236	1028	851	705
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.2"	-15.3"	-34.7"	-64.4"	-106.3"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-26.1"	-53.8"	-93.4"
TRAJ: 300 yd. zero	-1.5"	5.1"	5.9"	0.0"	-14.2"	-38.8"	-75.7"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.1"	10.7"	0.0"	-21.0"	-54.3"
TRAJ: 500 yd. zero	-1.5"	12.9"	21.5"	23.3"	16.8"	0.0"	-29.0"
TRAJ: 600 yd. zero	-1.5"	17.7"	31.2"	37.9"	36.2"	24.2"	0.0"
VELOCITY (fps)	2600	2385	2184	1994	1818	1652	1493
ENERGY (ft. lbs.)	1937	1630	1366	1139	945	782	639
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-16.9"	-38.0"	-69.8"	-114.3"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-9.7"	-28.4"	-57.8"	-99.9"
TRAJ: 300 yd. zero	-1.5"	5.8"	8.5"	0.0"	-15.5"	-41.8"	-80.5"
TRAJ: 400 yd. zero	-1.5"	9.5"	14.2"	11.7"	0.0"	-22.2"	-57.2"
TRAJ: 500 yd. zero	-1.5"	14.0"	23.1"	25.0"	17.8"	0.0"	-30.5"
TRAJ: 600 yd. zero	-1.5"	19.1"	33.3"	40.3"	38.2"	25.5"	0.0"
VELOCITY (fps)	2500	2291	2095	1911	1739	1582	1430
ENERGY (ft. lbs.)	1791	1504	1258	1047	867	717	586
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.3"	-18.7"	-42.0"	-77.2"	-125.7"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-10.6"	-31.2"	-63.7"	-109.8"
TRAJ: 300 yd. zero	-1.5"	6.2"	7.1"	0.0"	-17.0"	-48.0"	-88.3"
TRAJ: 400 yd. zero	-1.5"	10.5"	15.6"	12.8"	0.0"	-24.6"	-62.7"
TRAJ: 500 yd. zero	-1.5"	15.4"	25.5"	27.8"	19.7"	0.0"	-33.1"
TRAJ: 600 yd. zero	-1.5"	21.0"	36.8"	44.2"	41.8"	27.6"	0.0"
VELOCITY (fps)	2400	2197	2007	1828	1663	1503	1358
ENERGY (ft. lbs.)	1650	1383	1154	958	793	648	529
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-20.7"	-46.7"	-85.2"	-139.8"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-11.7"	-34.8"	-70.2"	-121.8"
TRAJ: 300 yd. zero	-1.5"	8.9"	7.8"	0.0"	-19.0"	-50.6"	-98.3"
TRAJ: 400 yd. zero	-1.5"	11.7"	17.3"	14.3"	0.0"	-26.8"	-89.8"
TRAJ: 500 yd. zero	-1.5"	17.1"	28.1"	30.4"	21.5"	0.0"	-37.5"
TRAJ: 600 yd. zero	-1.5"	23.3"	40.8"	49.2"	46.5"	31.3"	0.0"
VELOCITY (fps)	2300	2103	1919	1746	1589	1436	1299
ENERGY (ft. lbs.)	1516	1268	1055	874	723	591	484
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.4"	-22.7"	-50.8"	-92.7"	-151.6"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-13.0"	-37.7"	-78.5"	-132.3"
TRAJ: 300 yd. zero	-1.5"	7.8"	8.7"	0.0"	-20.3"	-54.8"	-106.2"
TRAJ: 400 yd. zero	-1.5"	12.7"	18.9"	15.3"	0.0"	-29.3"	-75.6"
TRAJ: 500 yd. zero	-1.5"	18.5"	30.6"	32.9"	23.5"	0.0"	-40.4"
TRAJ: 600 yd. zero	-1.5"	25.3"	44.1"	53.1"	50.4"	33.7"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2200	2009	1831	1666	1505	1360	1235
ENERGY (ft. lbs.)	1387	1157	960	795	649	530	437
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.2"	-25.6"	-56.6"	-103.5"	-168.7"
TRAJ: 200 yd. zero	-1.5"	3.6"	0.0"	-14.6"	-42.0"	-85.3"	-146.8"
TRAJ: 300 yd. zero	-1.5"	8.5"	9.8"	0.0"	-22.4"	-60.8"	-117.5"
TRAJ: 400 yd. zero	-1.5"	14.2"	21.0"	16.8"	0.0"	-32.8"	-83.8"
TRAJ: 500 yd. zero	-1.5"	20.7"	34.1"	36.5"	26.3"	0.0"	-44.4"
TRAJ: 600 yd. zero	-1.5"	28.1"	49.0"	58.8"	55.9"	37.0"	0.0"
VELOCITY (fps)	2100	1916	1743	1586	1433	1297	1184
ENERGY (ft. lbs.)	1264	1051	871	721	589	482	402
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.2"	-28.3"	-62.6"	-114.1"	-187.2"
TRAJ: 200 yd. zero	-1.5"	4.1"	0.0"	-15.9"	-46.1"	-93.4"	-162.4"
TRAJ: 300 yd. zero	-1.5"	9.5"	10.6"	0.0"	-24.8"	-66.8"	-130.5"
TRAJ: 400 yd. zero	-1.5"	15.7"	23.1"	18.6"	0.0"	-35.7"	-93.2"
TRAJ: 500 yd. zero	-1.5"	22.8"	37.4"	40.1"	28.6"	0.0"	-50.2"
TRAJ: 600 yd. zero	-1.5"	31.2"	54.1"	65.3"	62.2"	41.9"	0.0"
VELOCITY (fps)	2000	1822	1658	1498	1354	1230	1133
ENERGY (ft. lbs.)	1146	951	787	643	525	433	368
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.1"	-31.0"	-68.7"	-125.8"	-205.6"
TRAJ: 200 yd. zero	-1.5"	4.6"	0.0"	-17.3"	-50.5"	-103.0"	-178.2"
TRAJ: 300 yd. zero	-1.5"	10.3"	11.6"	0.0"	-27.3"	-74.1"	-143.5"
TRAJ: 400 yd. zero	-1.5"	17.2"	25.3"	20.5"	0.0"	-39.9"	-102.5"
TRAJ: 500 yd. zero	-1.5"	25.2"	41.2"	44.5"	32.0"	0.0"	-54.5"
TRAJ: 600 yd. zero	-1.5"	34.3"	59.4"	71.8"	68.4"	45.5"	0.0"
VELOCITY (fps)	1900	1729	1573	1421	1287	1176	1088
ENERGY (ft. lbs.)	1034	857	709	579	474	397	339
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.6"	-35.5"	-77.8"	-142.1"	-229.8"
TRAJ: 200 yd. zero	-1.5"	5.3"	0.0"	-19.5"	-56.4"	-115.4"	-197.8"
TRAJ: 300 yd. zero	-1.5"	11.8"	13.0"	0.0"	-30.4"	-82.9"	-158.7"
TRAJ: 400 yd. zero	-1.5"	19.5"	28.2"	22.8"	0.0"	-44.9"	-113.1"
TRAJ: 500 yd. zero	-1.5"	28.4"	46.2"	49.8"	35.9"	0.0"	-59.2"
TRAJ: 600 yd. zero	-1.5"	38.3"	65.9"	79.4"	75.4"	49.3"	0.0"

6.5 MM (.264" Dia.) 140 GRAIN SPIRE POINT  
SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .441

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2971	2751	2541	2342	2154	1977
ENERGY (ft. lbs.)	3184	2744	2353	2008	1705	1443	1216
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.7"	-22.4"	-41.6"	-68.6"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.0"	-17.4"	-35.4"	-61.1"
TRAJ: 300 yd. zero	-1.5"	3.3"	4.0"	0.0"	-9.3"	-25.3"	-49.0"
TRAJ: 400 yd. zero	-1.5"	5.6"	8.7"	7.0"	0.0"	-13.5"	-34.9"
TRAJ: 500 yd. zero	-1.5"	8.3"	14.2"	15.2"	10.9"	0.0"	-18.6"
TRAJ: 600 yd. zero	-1.5"	11.4"	20.4"	24.5"	23.3"	15.6"	0.0"
VELOCITY (fps)	3100	2875	2659	2454	2280	2076	1904
ENERGY (ft. lbs.)	2988	2570	2199	1872	1588	1341	1127
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-10.8"	-24.5"	-45.2"	-74.3"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.5"	-18.8"	-38.1"	-65.7"
TRAJ: 300 yd. zero	-1.5"	3.6"	4.4"	0.0"	-10.0"	-27.2"	-52.6"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.4"	7.6"	0.0"	-14.5"	-37.5"
TRAJ: 500 yd. zero	-1.5"	9.0"	15.2"	16.3"	11.7"	0.0"	-20.0"
TRAJ: 600 yd. zero	-1.5"	12.4"	21.9"	26.3"	25.0"	16.7"	0.0"
VELOCITY (fps)	3000	2779	2567	2367	2178	1999	1832
ENERGY (ft. lbs.)	2799	2401	2050	1742	1475	1243	1043
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-11.7"	-26.5"	-48.8"	-80.1"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.0"	-20.2"	-41.0"	-70.7"
TRAJ: 300 yd. zero	-1.5"	3.9"	4.7"	0.0"	-10.8"	-29.2"	-56.6"
TRAJ: 400 yd. zero	-1.5"	6.6"	10.1"	8.2"	0.0"	-15.6"	-40.3"
TRAJ: 500 yd. zero	-1.5"	9.8"	16.4"	17.8"	12.5"	0.0"	-21.4"
TRAJ: 600 yd. zero	-1.5"	13.4"	23.6"	28.3"	26.9"	17.9"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2683	2476	2281	2097	1923	1760
ENERGY (ft. lbs.)	2615	2239	1907	1618	1367	1150	963
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.8"	- 28.8"	- 52.9"	- 86.7"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.8"	- 21.9"	- 44.3"	- 76.3"
TRAJ: 300 yd. zero	- 1.5"	4.3"	5.1"	0.0"	- 11.7"	- 31.5"	- 61.0"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.0"	8.8"	0.0"	- 16.8"	- 43.4"
TRAJ: 500 yd. zero	- 1.5"	10.6"	17.7"	18.9"	13.5"	0.0"	- 23.1"
TRAJ: 600 yd. zero	- 1.5"	14.5"	25.5"	30.5"	29.0"	19.3"	0.0"
VELOCITY (fps)	2800	2587	2386	2196	2016	1847	1690
ENERGY (ft. lbs.)	2438	2082	1770	1499	1264	1061	888
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.1"	- 31.4"	- 57.5"	- 94.3"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.3"	- 23.7"	- 47.9"	- 82.8"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.6"	0.0"	- 12.6"	- 34.0"	- 66.1"
TRAJ: 400 yd. zero	- 1.5"	7.9"	11.9"	9.5"	0.0"	- 18.2"	- 47.1"
TRAJ: 500 yd. zero	- 1.5"	11.5"	19.2"	20.4"	14.6"	0.0"	- 25.2"
TRAJ: 600 yd. zero	- 1.5"	15.7"	27.6"	33.1"	31.4"	21.1"	0.0"
VELOCITY (fps)	2700	2492	2296	2111	1936	1773	1622
ENERGY (ft. lbs.)	2267	1931	1639	1385	1166	977	818
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.4"	- 34.3"	- 62.7"	- 103.0"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.0"	- 25.8"	- 52.0"	- 90.2"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.0"	0.0"	- 13.7"	- 36.9"	- 72.0"
TRAJ: 400 yd. zero	- 1.5"	8.6"	12.9"	10.3"	0.0"	- 19.7"	- 51.4"
TRAJ: 500 yd. zero	- 1.5"	12.6"	20.8"	22.2"	15.8"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	17.2"	30.1"	36.0"	34.3"	23.1"	0.0"
VELOCITY (fps)	2600	2398	2207	2027	1857	1699	1554
ENERGY (ft. lbs.)	2102	1788	1514	1277	1073	898	751
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.0"	- 37.8"	- 68.7"	- 111.6"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.8"	- 28.1"	- 56.8"	- 97.3"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.6"	0.0"	- 14.9"	- 40.3"	- 77.5"
TRAJ: 400 yd. zero	- 1.5"	9.4"	14.1"	11.2"	0.0"	- 21.8"	- 55.1"
TRAJ: 500 yd. zero	- 1.5"	13.7"	22.7"	24.2"	17.3"	0.0"	- 29.1"
TRAJ: 600 yd. zero	- 1.5"	18.6"	32.4"	38.8"	36.7"	24.3"	0.0"
VELOCITY (fps)	2500	2303	2118	1943	1779	1627	1479
ENERGY (ft. lbs.)	1943	1650	1394	1174	984	823	680
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.3"	- 18.3"	- 40.7"	- 74.9"	- 122.1"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 10.3"	- 30.1"	- 61.6"	- 106.1"
TRAJ: 300 yd. zero	- 1.5"	6.1"	6.9"	0.0"	- 16.2"	- 44.3"	- 85.3"
TRAJ: 400 yd. zero	- 1.5"	10.2"	15.1"	12.2"	0.0"	- 23.9"	- 60.9"
TRAJ: 500 yd. zero	- 1.5"	15.0"	24.6"	26.6"	19.2"	0.0"	- 32.2"
TRAJ: 600 yd. zero	- 1.5"	20.4"	35.4"	42.7"	40.6"	26.8"	0.0"
VELOCITY (fps)	2400	2209	2029	1859	1701	1556	1414
ENERGY (ft. lbs.)	1791	1517	1280	1075	900	753	622
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 20.3"	- 45.1"	- 81.7"	- 132.9"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 11.4"	- 33.2"	- 66.8"	- 115.0"
TRAJ: 300 yd. zero	- 1.5"	6.8"	7.6"	0.0"	- 17.9"	- 47.8"	- 92.2"
TRAJ: 400 yd. zero	- 1.5"	11.3"	16.6"	13.5"	0.0"	- 25.3"	- 65.2"
TRAJ: 500 yd. zero	- 1.5"	16.4"	26.7"	28.7"	20.3"	0.0"	- 34.7"
TRAJ: 600 yd. zero	- 1.5"	22.2"	38.3"	46.1"	43.5"	29.0"	0.0"
VELOCITY (fps)	2300	2115	1940	1776	1625	1476	1342
ENERGY (ft. lbs.)	1645	1390	1170	981	821	678	560
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.3"	- 22.1"	- 49.6"	- 90.3"	- 146.8"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 12.5"	- 36.9"	- 74.4"	- 127.7"
TRAJ: 300 yd. zero	- 1.5"	7.4"	8.4"	0.0"	- 20.1"	- 53.4"	- 102.6"
TRAJ: 400 yd. zero	- 1.5"	12.4"	18.5"	15.1"	0.0"	- 28.3"	- 72.4"
TRAJ: 500 yd. zero	- 1.5"	18.1"	29.8"	32.1"	22.7"	0.0"	- 38.4"
TRAJ: 600 yd. zero	- 1.5"	24.5"	42.6"	51.3"	48.3"	32.0"	0.0"
VELOCITY (fps)	2200	2020	1851	1694	1549	1408	1282
ENERGY (ft. lbs.)	1505	1269	1066	892	747	616	511
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.1"	- 24.8"	- 54.6"	- 99.1"	- 161.9"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 14.0"	- 40.2"	- 81.2"	- 140.4"
TRAJ: 300 yd. zero	- 1.5"	8.3"	9.4"	0.0"	- 21.5"	- 57.8"	- 112.3"
TRAJ: 400 yd. zero	- 1.5"	13.7"	20.1"	16.1"	0.0"	- 30.9"	- 80.0"
TRAJ: 500 yd. zero	- 1.5"	19.8"	32.5"	34.7"	24.7"	0.0"	- 42.9"
TRAJ: 600 yd. zero	- 1.5"	27.0"	46.8"	56.2"	53.4"	35.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2100	1926	1763	1613	1466	1332	1218
ENERGY (ft. lbs.)	1371	1154	967	809	668	552	461
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.1"	-28.1"	-61.2"	-111.2"	-180.8"
TRAJ: 200 yd. zero	-1.5"	4.1"	0.0"	-15.9"	-45.0"	-90.9"	-156.5"
TRAJ: 300 yd. zero	-1.5"	9.4"	10.7"	0.0"	-23.7"	-64.3"	-124.5"
TRAJ: 400 yd. zero	-1.5"	15.3"	22.5"	17.8"	0.0"	-34.6"	-88.9"
TRAJ: 500 yd. zero	-1.5"	22.2"	36.4"	38.6"	27.7"	0.0"	-47.3"
TRAJ: 600 yd. zero	-1.5"	30.1"	52.2"	62.3"	59.3"	39.4"	0.0"
VELOCITY (fps)	2000	1832	1676	1533	1393	1270	1168
ENERGY (ft. lbs.)	1244	1044	874	731	604	501	424
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.3"	-31.3"	-68.7"	-124.3"	-201.4"
TRAJ: 200 yd. zero	-1.5"	4.7"	0.0"	-17.3"	-50.0"	-100.9"	-173.4"
TRAJ: 300 yd. zero	-1.5"	10.5"	11.6"	0.0"	-26.9"	-72.0"	-138.7"
TRAJ: 400 yd. zero	-1.5"	17.2"	25.0"	20.2"	0.0"	-38.3"	-98.3"
TRAJ: 500 yd. zero	-1.5"	24.9"	40.4"	43.2"	30.7"	0.0"	-52.2"
TRAJ: 600 yd. zero	-1.5"	33.6"	57.8"	69.4"	65.6"	43.6"	0.0"
VELOCITY (fps)	1900	1739	1591	1445	1314	1204	1113
ENERGY (ft. lbs.)	1123	940	787	650	537	450	385
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.3"	-34.9"	-76.5"	-138.8"	-223.9"
TRAJ: 200 yd. zero	-1.5"	5.2"	0.0"	-19.4"	-55.9"	-113.0"	-193.0"
TRAJ: 300 yd. zero	-1.5"	11.6"	13.0"	0.0"	-30.0"	-80.6"	-154.1"
TRAJ: 400 yd. zero	-1.5"	19.1"	28.0"	22.5"	0.0"	-43.1"	-109.1"
TRAJ: 500 yd. zero	-1.5"	27.8"	45.2"	48.4"	34.6"	0.0"	-57.3"
TRAJ: 600 yd. zero	-1.5"	37.3"	64.3"	77.1"	72.8"	47.8"	0.0"
VELOCITY (fps)	1800	1647	1497	1360	1241	1147	1068
ENERGY (ft. lbs.)	1007	843	696	575	479	409	355
TRAJ: 100 yd. zero	-1.5"	0.0"	-11.7"	-39.2"	-86.1"	-154.8"	-249.4"
TRAJ: 200 yd. zero	-1.5"	5.9"	0.0"	-21.5"	-62.6"	-125.4"	-214.1"
TRAJ: 300 yd. zero	-1.5"	13.1"	14.4"	0.0"	-33.8"	-89.4"	-170.9"
TRAJ: 400 yd. zero	-1.5"	21.5"	31.3"	25.4"	0.0"	-47.1"	-120.1"
TRAJ: 500 yd. zero	-1.5"	31.0"	50.2"	53.7"	37.7"	0.0"	-63.6"
TRAJ: 600 yd. zero	-1.5"	41.6"	71.4"	85.5"	80.1"	53.0"	0.0"

**6.5 MM (.264" Dia.) 140 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .291

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2856	2535	2238	1967	1720	1493
ENERGY (ft. lbs.)	3184	2537	1998	1557	1203	920	693
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-11.2"	-26.8"	-51.6"	-87.9"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.9"	-21.1"	-44.5"	-79.3"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.8"	-32.8"	-65.4"
TRAJ: 400 yd. zero	-1.5"	6.7"	10.6"	8.9"	0.0"	-18.0"	-47.6"
TRAJ: 500 yd. zero	-1.5"	10.3"	17.8"	19.7"	14.5"	0.0"	-25.9"
TRAJ: 600 yd. zero	-1.5"	14.7"	26.5"	32.7"	31.8"	21.6"	0.0"
VELOCITY (fps)	3100	2763	2447	2158	1894	1655	1437
ENERGY (ft. lbs.)	2988	2373	1863	1448	1115	852	642
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.2"	-28.8"	-55.2"	-94.5"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.4"	-22.4"	-47.2"	-84.8"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.0"	0.0"	-12.5"	-34.8"	-70.0"
TRAJ: 400 yd. zero	-1.5"	7.2"	11.2"	9.4"	0.0"	-19.2"	-51.2"
TRAJ: 500 yd. zero	-1.5"	11.1"	18.9"	20.9"	15.4"	0.0"	-28.1"
TRAJ: 600 yd. zero	-1.5"	15.8"	28.3"	35.0"	34.2"	23.5"	0.0"
VELOCITY (fps)	3000	2669	2361	2079	1822	1592	1381
ENERGY (ft. lbs.)	2799	2215	1733	1344	1032	788	593
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.4"	-13.3"	-31.4"	-59.9"	-102.5"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-8.1"	-24.5"	-51.2"	-92.1"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-13.6"	-37.6"	-75.8"
TRAJ: 400 yd. zero	-1.5"	7.9"	12.3"	10.2"	0.0"	-20.6"	-55.3"
TRAJ: 500 yd. zero	-1.5"	12.0"	20.5"	22.6"	16.5"	0.0"	-30.6"
TRAJ: 600 yd. zero	-1.5"	17.1"	30.7"	37.9"	36.9"	25.5"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2575	2275	2001	1750	1530	1328
ENERGY (ft. lbs.)	2615	2062	1610	1244	953	728	549
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.5"	- 34.4"	- 65.9"	- 112.0"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.8"	- 26.5"	- 56.1"	- 100.2"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.8"	0.0"	- 14.9"	- 41.6"	- 82.8"
TRAJ: 400 yd. zero	- 1.5"	8.8"	13.3"	11.2"	0.0"	- 22.8"	- 60.3"
TRAJ: 500 yd. zero	- 1.5"	13.2"	22.4"	25.0"	18.3"	0.0"	- 32.9"
TRAJ: 600 yd. zero	- 1.5"	18.7"	33.4"	41.4"	40.3"	27.4"	0.0"
VELOCITY (fps)	2800	2482	2190	1923	1681	1459	1270
ENERGY (ft. lbs.)	2438	1916	1491	1150	879	662	502
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.9"	- 37.3"	- 70.9"	- 121.0"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.5"	- 28.8"	- 60.2"	- 108.2"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.4"	0.0"	- 16.0"	- 44.3"	- 89.0"
TRAJ: 400 yd. zero	- 1.5"	9.3"	14.4"	12.1"	0.0"	- 24.2"	- 64.9"
TRAJ: 500 yd. zero	- 1.5"	14.2"	24.1"	26.6"	19.4"	0.0"	- 35.9"
TRAJ: 600 yd. zero	- 1.5"	20.2"	36.1"	44.5"	43.3"	29.9"	0.0"
VELOCITY (fps)	2700	2390	2105	1846	1613	1400	1223
ENERGY (ft. lbs.)	2267	1776	1378	1059	809	609	465
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 17.2"	- 40.3"	- 77.0"	- 131.2"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.2"	- 31.0"	- 65.3"	- 117.2"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.8"	0.0"	- 17.3"	- 48.2"	- 96.7"
TRAJ: 400 yd. zero	- 1.5"	10.1"	15.5"	13.0"	0.0"	- 26.5"	- 70.7"
TRAJ: 500 yd. zero	- 1.5"	15.4"	26.1"	28.9"	21.3"	0.0"	- 38.8"
TRAJ: 600 yd. zero	- 1.5"	21.9"	39.1"	48.4"	47.2"	32.4"	0.0"
VELOCITY (fps)	2600	2298	2021	1769	1546	1342	1181
ENERGY (ft. lbs.)	2102	1642	1270	973	743	560	433
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.2"	- 44.5"	- 84.4"	- 143.4"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.3"	- 34.0"	- 71.2"	- 127.6"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.6"	0.0"	- 18.8"	- 52.3"	- 104.8"
TRAJ: 400 yd. zero	- 1.5"	11.1"	17.0"	14.1"	0.0"	- 28.7"	- 76.6"
TRAJ: 500 yd. zero	- 1.5"	16.9"	28.5"	31.4"	23.0"	0.0"	- 42.0"
TRAJ: 600 yd. zero	- 1.5"	23.9"	42.5"	52.4"	51.1"	35.1"	0.0"
VELOCITY (fps)	2500	2206	1938	1694	1471	1280	1137
ENERGY (ft. lbs.)	1943	1514	1167	892	672	509	402
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.7"	- 20.9"	- 48.5"	- 92.3"	- 157.5"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.3"	- 36.9"	- 77.9"	- 140.1"
TRAJ: 300 yd. zero	- 1.5"	7.0"	8.2"	0.0"	- 20.5"	- 57.3"	- 115.5"
TRAJ: 400 yd. zero	- 1.5"	12.1"	18.5"	15.4"	0.0"	- 31.7"	- 84.7"
TRAJ: 500 yd. zero	- 1.5"	18.5"	31.2"	34.4"	25.4"	0.0"	- 46.6"
TRAJ: 600 yd. zero	- 1.5"	26.3"	46.7"	57.8"	56.5"	38.9"	0.0"
VELOCITY (fps)	2400	2115	1854	1620	1406	1228	1098
ENERGY (ft. lbs.)	1791	1391	1069	816	615	469	375
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.5"	- 23.3"	- 53.5"	- 101.8"	- 171.5"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 13.5"	- 40.4"	- 85.3"	- 151.8"
TRAJ: 300 yd. zero	- 1.5"	7.8"	9.0"	0.0"	- 22.4"	- 62.8"	- 124.8"
TRAJ: 400 yd. zero	- 1.5"	13.4"	20.2"	16.8"	0.0"	- 34.8"	- 91.1"
TRAJ: 500 yd. zero	- 1.5"	20.4"	34.2"	37.7"	27.9"	0.0"	- 49.3"
TRAJ: 600 yd. zero	- 1.5"	28.6"	50.6"	62.4"	60.8"	41.1"	0.0"
VELOCITY (fps)	2300	2023	1771	1548	1343	1182	1066
ENERGY (ft. lbs.)	1645	1273	975	745	561	434	353
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.2"	- 25.7"	- 58.9"	- 111.1"	- 186.7"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 14.8"	- 44.4"	- 93.1"	- 165.0"
TRAJ: 300 yd. zero	- 1.5"	8.6"	9.9"	0.0"	- 24.6"	- 68.2"	- 135.2"
TRAJ: 400 yd. zero	- 1.5"	14.7"	22.2"	18.5"	0.0"	- 37.5"	- 98.3"
TRAJ: 500 yd. zero	- 1.5"	22.2"	37.2"	41.0"	30.0"	0.0"	- 53.2"
TRAJ: 600 yd. zero	- 1.5"	31.1"	55.0"	67.6"	65.5"	44.4"	0.0"
VELOCITY (fps)	2200	1932	1689	1466	1276	1134	1033
ENERGY (ft. lbs.)	1505	1161	887	668	506	400	332
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.0"	- 28.5"	- 65.7"	- 123.7"	- 206.2"
TRAJ: 200 yd. zero	- 1.5"	4.0"	0.0"	- 16.5"	- 49.6"	- 103.5"	- 182.0"
TRAJ: 300 yd. zero	- 1.5"	9.5"	11.0"	0.0"	- 27.6"	- 76.0"	- 149.0"
TRAJ: 400 yd. zero	- 1.5"	16.4"	24.8"	20.7"	0.0"	- 41.4"	- 107.5"
TRAJ: 500 yd. zero	- 1.5"	24.7"	41.4"	45.6"	33.2"	0.0"	- 57.7"
TRAJ: 600 yd. zero	- 1.5"	34.4"	60.7"	74.5"	71.7"	48.2"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2100	1841	1608	1396	1220	1092	1001
ENERGY (ft. lbs.)	1371	1054	804	606	463	371	312
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.0"	- 31.6"	- 72.5"	- 135.6"	- 225.0"
TRAJ: 200 yd. zero	- 1.5"	4.5"	0.0"	- 18.0"	- 54.4"	- 113.0"	- 197.8"
TRAJ: 300 yd. zero	- 1.5"	10.5"	12.0"	0.0"	- 30.3"	- 82.9"	- 161.7"
TRAJ: 400 yd. zero	- 1.5"	18.1"	27.2"	22.8"	0.0"	- 44.9"	- 116.1"
TRAJ: 500 yd. zero	- 1.5"	27.1"	45.2"	49.8"	36.0"	0.0"	- 62.2"
TRAJ: 600 yd. zero	- 1.5"	37.5"	65.9"	80.9"	77.5"	51.8"	0.0"
VELOCITY (fps)	2000	1750	1529	1328	1171	1058	976
ENERGY (ft. lbs.)	1244	952	727	548	426	348	296
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 10.3"	- 35.7"	- 80.4"	- 149.1"	- 247.0"
TRAJ: 200 yd. zero	- 1.5"	5.2"	0.0"	- 20.2"	- 59.8"	- 123.3"	- 216.0"
TRAJ: 300 yd. zero	- 1.5"	11.9"	13.5"	0.0"	- 32.8"	- 89.6"	- 175.5"
TRAJ: 400 yd. zero	- 1.5"	20.1"	29.9"	24.7"	0.0"	- 48.5"	- 126.2"
TRAJ: 500 yd. zero	- 1.5"	29.8"	49.4"	53.8"	38.8"	0.0"	- 68.0"
TRAJ: 600 yd. zero	- 1.5"	41.2"	72.0"	87.8"	84.2"	56.7"	0.0"
VELOCITY (fps)	1900	1661	1441	1256	1116	1019	945
ENERGY (ft. lbs.)	1123	858	646	491	387	323	277
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 11.3"	- 39.9"	- 90.3"	- 166.5"	- 272.4"
TRAJ: 200 yd. zero	- 1.5"	5.7"	0.0"	- 22.9"	- 67.6"	- 138.1"	- 238.4"
TRAJ: 300 yd. zero	- 1.5"	13.3"	15.3"	0.0"	- 37.0"	- 99.9"	- 192.5"
TRAJ: 400 yd. zero	- 1.5"	22.6"	33.8"	27.8"	0.0"	- 53.6"	- 136.9"
TRAJ: 500 yd. zero	- 1.5"	33.3"	55.3"	60.0"	42.9"	0.0"	- 72.5"
TRAJ: 600 yd. zero	- 1.5"	45.4"	79.5"	96.3"	91.3"	60.5"	0.0"
VELOCITY (fps)	1800	1573	1365	1197	1077	990	917
ENERGY (ft. lbs.)	1007	769	579	446	360	305	261
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 13.0"	- 45.2"	- 100.7"	- 184.0"	- 298.8"
TRAJ: 200 yd. zero	- 1.5"	6.5"	0.0"	- 25.7"	- 74.7"	- 151.5"	- 259.8"
TRAJ: 300 yd. zero	- 1.5"	15.1"	17.1"	0.0"	- 40.4"	- 108.7"	- 208.4"
TRAJ: 400 yd. zero	- 1.5"	25.2"	37.4"	30.3"	0.0"	- 58.1"	- 147.7"
TRAJ: 500 yd. zero	- 1.5"	36.8"	60.6"	65.2"	46.5"	0.0"	- 77.9"
TRAJ: 600 yd. zero	- 1.5"	49.8"	86.6"	104.2"	98.5"	65.0"	0.0"

**6.5 MM (.264" Dia.) 160 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .328 BALLISTIC COEFFICIENT: .251

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2526	2185	1878	1606	1364	1177
ENERGY (ft. lbs.)	2989	2267	1696	1253	917	662	492
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.1"	- 15.6"	- 37.4"	- 72.4"	- 126.3"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.5"	- 29.1"	- 62.1"	- 114.0"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.3"	0.0"	- 16.4"	- 46.3"	- 94.9"
TRAJ: 400 yd. zero	- 1.5"	9.4"	14.6"	12.4"	0.0"	- 25.7"	- 70.2"
TRAJ: 500 yd. zero	- 1.5"	14.5"	24.9"	27.8"	20.6"	0.0"	- 39.3"
TRAJ: 600 yd. zero	- 1.5"	21.1"	38.0"	47.5"	46.8"	32.8"	0.0"
VELOCITY (fps)	2800	2434	2102	1804	1542	1312	1141
ENERGY (ft. lbs.)	2786	2105	1570	1156	845	611	463
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.5"	- 17.0"	- 40.6"	- 78.9"	- 137.1"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.2"	- 31.6"	- 67.6"	- 123.5"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.8"	0.0"	- 17.9"	- 50.5"	- 103.0"
TRAJ: 400 yd. zero	- 1.5"	10.2"	15.8"	13.5"	0.0"	- 28.0"	- 76.1"
TRAJ: 500 yd. zero	- 1.5"	15.8"	27.0"	30.3"	22.5"	0.0"	- 42.4"
TRAJ: 600 yd. zero	- 1.5"	22.9"	41.2"	51.5"	50.8"	35.4"	0.0"
VELOCITY (fps)	2700	2343	2020	1730	1470	1254	1099
ENERGY (ft. lbs.)	2591	1950	1450	1064	768	559	429
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 18.5"	- 44.0"	- 85.7"	- 147.9"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 11.1"	- 34.1"	- 73.3"	- 132.9"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.4"	0.0"	- 19.3"	- 54.8"	- 110.7"
TRAJ: 400 yd. zero	- 1.5"	11.0"	17.1"	14.5"	0.0"	- 30.6"	- 81.8"
TRAJ: 500 yd. zero	- 1.5"	17.2"	29.3"	32.9"	24.5"	0.0"	- 45.0"
TRAJ: 600 yd. zero	- 1.5"	24.7"	44.3"	55.4"	54.5"	37.5"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	800 yds.
VELOCITY (fps)	2600	2252	1938	1659	1409	1208	1070
ENERGY (ft. lbs.)	2402	1802	1335	978	706	518	407
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.4"	-20.3"	-47.8"	-93.0"	-180.3"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-12.1"	-36.9"	-79.3"	-143.9"
TRAJ: 300 yd. zero	-1.5"	6.8"	8.1"	0.0"	-20.7"	-59.1"	-119.7"
TRAJ: 400 yd. zero	-1.5"	12.0"	18.5"	15.6"	0.0"	-33.2"	-88.5"
TRAJ: 500 yd. zero	-1.5"	18.6"	31.7"	35.5"	26.6"	0.0"	-48.7"
TRAJ: 600 yd. zero	-1.5"	26.7"	48.0"	59.9"	59.0"	40.6"	0.0"
VELOCITY (fps)	2500	2162	1857	1588	1349	1166	1043
ENERGY (ft. lbs.)	2221	1661	1226	897	647	483	386
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-22.3"	-52.6"	-102.0"	-174.2"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-13.3"	-40.5"	-86.9"	-156.0"
TRAJ: 300 yd. zero	-1.5"	7.5"	8.9"	0.0"	-22.8"	-64.8"	-129.4"
TRAJ: 400 yd. zero	-1.5"	13.2"	20.3"	17.1"	0.0"	-36.2"	-95.2"
TRAJ: 500 yd. zero	-1.5"	20.4"	34.8"	38.9"	29.0"	0.0"	-51.8"
TRAJ: 600 yd. zero	-1.5"	29.0"	52.0"	64.7"	63.5"	43.1"	0.0"
VELOCITY (fps)	2400	2072	1776	1509	1285	1124	1014
ENERGY (ft. lbs.)	2047	1525	1121	809	587	449	365
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.9"	-24.8"	-58.3"	-112.4"	-191.3"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-14.5"	-44.5"	-95.1"	-170.6"
TRAJ: 300 yd. zero	-1.5"	8.3"	9.7"	0.0"	-25.1"	-70.9"	-141.5"
TRAJ: 400 yd. zero	-1.5"	14.6"	22.3"	18.9"	0.0"	-39.5"	-103.8"
TRAJ: 500 yd. zero	-1.5"	22.5"	38.1"	42.6"	31.6"	0.0"	-56.4"
TRAJ: 600 yd. zero	-1.5"	31.9"	56.9"	70.8"	69.3"	47.1"	0.0"
VELOCITY (fps)	2300	1981	1696	1441	1232	1085	986
ENERGY (ft. lbs.)	1880	1395	1023	738	539	419	346
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.4"	-27.3"	-63.9"	-122.5"	-207.8"
TRAJ: 200 yd. zero	-1.5"	3.7"	0.0"	-16.1"	-49.0"	-103.8"	-185.1"
TRAJ: 300 yd. zero	-1.5"	9.1"	10.8"	0.0"	-27.4"	-76.9"	-152.8"
TRAJ: 400 yd. zero	-1.5"	16.0"	24.5"	20.6"	0.0"	-42.5"	-111.8"
TRAJ: 500 yd. zero	-1.5"	24.5"	41.6"	46.2"	34.1"	0.0"	-60.5"
TRAJ: 600 yd. zero	-1.5"	34.6"	61.7"	76.4"	74.4"	50.4"	0.0"
VELOCITY (fps)	2200	1891	1618	1374	1183	1054	963
ENERGY (ft. lbs.)	1720	1271	930	671	498	395	330
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.4"	-30.4"	-70.9"	-134.6"	-225.6"
TRAJ: 200 yd. zero	-1.5"	4.2"	0.0"	-17.7"	-54.0"	-113.5"	-200.3"
TRAJ: 300 yd. zero	-1.5"	10.1"	11.8"	0.0"	-30.4"	-83.9"	-164.8"
TRAJ: 400 yd. zero	-1.5"	17.7"	27.0"	22.8"	0.0"	-45.9"	-119.2"
TRAJ: 500 yd. zero	-1.5"	26.9"	45.4"	50.4"	36.8"	0.0"	-64.0"
TRAJ: 600 yd. zero	-1.5"	37.6"	66.8"	82.4"	79.5"	53.4"	0.0"
VELOCITY (fps)	2100	1802	1541	1310	1140	1025	941
ENERGY (ft. lbs.)	1567	1153	844	610	462	373	315
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.8"	-34.2"	-79.3"	-149.1"	-247.8"
TRAJ: 200 yd. zero	-1.5"	4.8"	0.0"	-19.8"	-60.1"	-125.1"	-218.9"
TRAJ: 300 yd. zero	-1.5"	11.4"	13.2"	0.0"	-33.7"	-92.1"	-179.3"
TRAJ: 400 yd. zero	-1.5"	19.8"	30.1"	25.3"	0.0"	-49.9"	-128.7"
TRAJ: 500 yd. zero	-1.5"	29.8"	50.1"	55.3"	40.0"	0.0"	-68.7"
TRAJ: 600 yd. zero	-1.5"	41.3"	73.0"	89.7"	85.8"	57.3"	0.0"
VELOCITY (fps)	2000	1713	1455	1242	1092	991	910
ENERGY (ft. lbs.)	1421	1043	752	549	424	349	294
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.6"	-38.2"	-87.5"	-163.1"	-269.0"
TRAJ: 200 yd. zero	-1.5"	5.3"	0.0"	-22.2"	-66.1"	-136.4"	-236.9"
TRAJ: 300 yd. zero	-1.5"	12.8"	14.8"	0.0"	-36.5"	-99.3"	-192.5"
TRAJ: 400 yd. zero	-1.5"	21.9"	33.1"	27.4"	0.0"	-53.7"	-137.7"
TRAJ: 500 yd. zero	-1.5"	32.6"	54.6"	59.6"	43.0"	0.0"	-73.2"
TRAJ: 600 yd. zero	-1.5"	44.8"	79.0"	96.3"	91.8"	61.1"	0.0"
VELOCITY (fps)	1900	1625	1381	1188	1057	965	888
ENERGY (ft. lbs.)	1283	939	677	501	397	331	280
TRAJ: 100 yd. zero	-1.5"	0.0"	-11.8"	-42.4"	-96.3"	-179.0"	-294.0"
TRAJ: 200 yd. zero	-1.5"	5.9"	0.0"	-24.6"	-72.6"	-149.3"	-258.4"
TRAJ: 300 yd. zero	-1.5"	14.2"	16.4"	0.0"	-39.7"	-108.2"	-209.1"
TRAJ: 400 yd. zero	-1.5"	24.1"	36.3"	29.8"	0.0"	-58.6"	-149.5"
TRAJ: 500 yd. zero	-1.5"	35.8"	59.8"	65.0"	46.9"	0.0"	-79.1"
TRAJ: 600 yd. zero	-1.5"	49.0"	86.1"	104.6"	99.7"	66.0"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	1800	1539	1309	1140	1025	940	866
ENERGY (ft. lbs.)	1151	842	609	461	373	314	266
TRAJ: 100 yd. zero	-1.5"	0.0"	-13.6"	-47.4"	-106.3"	-195.7"	-319.5"
TRAJ: 200 yd. zero	-1.5"	6.8"	0.0"	-26.9"	-78.9"	-161.5"	-278.5"
TRAJ: 300 yd. zero	-1.5"	15.8"	18.0"	0.0"	-43.0"	-116.6"	-224.6"
TRAJ: 400 yd. zero	-1.5"	26.6"	39.5"	32.3"	0.0"	-62.8"	-160.1"
TRAJ: 500 yd. zero	-1.5"	39.1"	64.6"	70.0"	50.3"	0.0"	-84.7"
TRAJ: 600 yd. zero	-1.5"	53.3"	92.8"	112.3"	106.8"	70.6"	0.0"

**270 CALIBER (.277" Dia.) 100 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .186 BALLISTIC COEFFICIENT: .294

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3425	3072	2739	2429	2144	1884
ENERGY (ft. lbs.)	3207	2606	2096	1667	1311	1021	788
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.5"	-6.7"	-16.8"	-32.7"	-56.6"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.5"	-13.8"	-28.9"	-52.1"
TRAJ: 300 yd. zero	-1.5"	2.3"	3.0"	0.0"	-7.8"	-21.4"	-43.1"
TRAJ: 400 yd. zero	-1.5"	4.2"	6.9"	5.9"	0.0"	-11.6"	-31.3"
TRAJ: 500 yd. zero	-1.5"	6.6"	11.6"	12.9"	9.3"	0.0"	-17.3"
TRAJ: 600 yd. zero	-1.5"	9.4"	17.4"	21.6"	20.9"	14.5"	0.0"
VELOCITY (fps)	3700	3331	2983	2656	2352	2074	1819
ENERGY (ft. lbs.)	3041	2464	1976	1567	1229	955	735
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.6"	-7.3"	-18.0"	-35.0"	-60.2"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.8"	-14.6"	-30.8"	-55.1"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.2"	0.0"	-8.2"	-22.8"	-45.4"
TRAJ: 400 yd. zero	-1.5"	4.5"	7.3"	6.2"	0.0"	-12.5"	-33.1"
TRAJ: 500 yd. zero	-1.5"	7.0"	12.4"	13.7"	10.0"	0.0"	-18.1"
TRAJ: 600 yd. zero	-1.5"	10.0"	18.4"	22.7"	22.1"	15.1"	0.0"
VELOCITY (fps)	3600	3236	2894	2573	2276	2004	1756
ENERGY (ft. lbs.)	2878	2326	1860	1470	1151	892	685
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-8.0"	-19.5"	-37.9"	-65.1"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.2"	-15.8"	-33.2"	-59.4"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.5"	0.0"	-8.8"	-24.5"	-49.0"
TRAJ: 400 yd. zero	-1.5"	4.9"	7.9"	6.6"	0.0"	-13.5"	-35.7"
TRAJ: 500 yd. zero	-1.5"	7.6"	13.3"	14.7"	10.8"	0.0"	-19.5"
TRAJ: 600 yd. zero	-1.5"	10.9"	19.8"	24.5"	23.8"	16.3"	0.0"
VELOCITY (fps)	3500	3142	2806	2490	2200	1935	1694
ENERGY (ft. lbs.)	2721	2193	1748	1378	1075	831	637
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.7"	-21.2"	-41.1"	-70.6"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.6"	-17.0"	-35.9"	-64.3"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-9.5"	-26.5"	-53.0"
TRAJ: 400 yd. zero	-1.5"	5.3"	8.5"	7.2"	0.0"	-14.5"	-38.7"
TRAJ: 500 yd. zero	-1.5"	8.2"	14.4"	15.9"	11.7"	0.0"	-21.2"
TRAJ: 600 yd. zero	-1.5"	11.8"	21.4"	26.5"	25.8"	17.7"	0.0"
VELOCITY (fps)	3400	3048	2717	2409	2125	1866	1633
ENERGY (ft. lbs.)	2568	2063	1640	1288	1003	774	592
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.4"	-22.6"	-43.6"	-74.8"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.9"	-17.9"	-37.7"	-67.7"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-10.0"	-27.8"	-55.8"
TRAJ: 400 yd. zero	-1.5"	5.7"	9.0"	7.6"	0.0"	-15.3"	-40.7"
TRAJ: 500 yd. zero	-1.5"	8.7"	15.1"	16.7"	12.2"	0.0"	-22.4"
TRAJ: 600 yd. zero	-1.5"	12.5"	22.6"	27.9"	27.2"	18.7"	0.0"
VELOCITY (fps)	3300	2954	2629	2327	2051	1799	1574
ENERGY (ft. lbs.)	2419	1938	1535	1203	934	718	550
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.3"	-24.7"	-47.5"	-80.8"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.4"	-19.5"	-41.0"	-73.0"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.3"	0.0"	-10.9"	-30.2"	-60.1"
TRAJ: 400 yd. zero	-1.5"	6.2"	9.8"	8.2"	0.0"	-16.5"	-43.7"
TRAJ: 500 yd. zero	-1.5"	9.5"	16.4"	18.1"	13.3"	0.0"	-23.8"
TRAJ: 600 yd. zero	-1.5"	13.5"	24.4"	30.1"	29.2"	19.9"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2860	2541	2247	1977	1732	1506
ENERGY (ft. lbs.)	2274	1817	1434	1121	868	666	503
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.0"	- 26.3"	- 50.9"	- 86.8"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.8"	- 20.6"	- 43.8"	- 78.4"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.6"	0.0"	- 11.5"	- 32.4"	- 64.7"
TRAJ: 400 yd. zero	- 1.5"	6.6"	10.3"	8.6"	0.0"	- 18.0"	- 47.4"
TRAJ: 500 yd. zero	- 1.5"	10.2"	17.6"	19.5"	14.4"	0.0"	- 25.7"
TRAJ: 600 yd. zero	- 1.5"	14.5"	26.2"	32.4"	31.6"	21.5"	0.0"
VELOCITY (fps)	3100	2766	2454	2167	1904	1667	1449
ENERGY (ft. lbs.)	2134	1699	1337	1043	805	617	466
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.2"	- 28.8"	- 55.2"	- 94.3"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.4"	- 22.5"	- 47.3"	- 84.8"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.0"	0.0"	- 12.5"	- 34.9"	- 69.8"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.3"	9.4"	0.0"	- 19.2"	- 51.0"
TRAJ: 500 yd. zero	- 1.5"	11.1"	19.0"	20.9"	15.4"	0.0"	- 27.9"
TRAJ: 600 yd. zero	- 1.5"	15.7"	28.3"	34.9"	34.0"	23.3"	0.0"
VELOCITY (fps)	3000	2672	2367	2087	1832	1603	1393
ENERGY (ft. lbs.)	1999	1586	1244	968	745	571	431
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.2"	- 31.4"	- 59.8"	- 101.6"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.9"	- 24.3"	- 50.9"	- 91.0"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.3"	0.0"	- 13.7"	- 37.6"	- 75.0"
TRAJ: 400 yd. zero	- 1.5"	7.9"	12.2"	10.3"	0.0"	- 20.5"	- 54.4"
TRAJ: 500 yd. zero	- 1.5"	12.0"	20.4"	22.6"	16.4"	0.0"	- 29.8"
TRAJ: 600 yd. zero	- 1.5"	16.9"	30.3"	37.5"	36.3"	24.9"	0.0"

**270 CALIBER (.277" Dia.) 110 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .205 BALLISTIC COEFFICIENT: .356

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3298	3011	2738	2480	2239	2016
ENERGY (ft. lbs.)	3166	2658	2215	1832	1503	1225	993
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.7"	- 7.4"	- 17.8"	- 34.1"	- 57.3"
TRAJ: 200 yd. zero	- 1.5"	.9"	0.0"	- 4.7"	- 14.2"	- 29.7"	- 52.0"
TRAJ: 300 yd. zero	- 1.5"	2.5"	3.2"	0.0"	- 7.9"	- 21.7"	- 42.4"
TRAJ: 400 yd. zero	- 1.5"	4.5"	7.1"	5.9"	0.0"	- 11.8"	- 30.5"
TRAJ: 500 yd. zero	- 1.5"	6.8"	11.9"	13.1"	9.5"	0.0"	- 16.3"
TRAJ: 600 yd. zero	- 1.5"	9.6"	17.3"	21.2"	20.4"	13.6"	0.0"
VELOCITY (fps)	3500	3203	2920	2652	2400	2165	1946
ENERGY (ft. lbs.)	2993	2506	2084	1719	1407	1145	925
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.9"	- 8.0"	- 19.2"	- 36.7"	- 61.6"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.1"	- 15.3"	- 31.8"	- 55.7"
TRAJ: 300 yd. zero	- 1.5"	2.7"	3.4"	0.0"	- 8.4"	- 23.3"	- 45.5"
TRAJ: 400 yd. zero	- 1.5"	4.8"	7.7"	6.4"	0.0"	- 12.7"	- 32.7"
TRAJ: 500 yd. zero	- 1.5"	7.4"	12.7"	14.0"	10.2"	0.0"	- 17.5"
TRAJ: 600 yd. zero	- 1.5"	10.3"	18.6"	22.8"	21.9"	14.6"	0.0"
VELOCITY (fps)	3400	3108	2830	2567	2320	2090	1877
ENERGY (ft. lbs.)	2824	2360	1957	1609	1315	1068	861
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.7"	- 20.7"	- 39.2"	- 65.8"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.4"	- 16.4"	- 33.8"	- 59.3"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.7"	0.0"	- 9.1"	- 24.6"	- 48.3"
TRAJ: 400 yd. zero	- 1.5"	5.2"	8.2"	6.8"	0.0"	- 13.2"	- 34.6"
TRAJ: 500 yd. zero	- 1.5"	7.8"	13.5"	14.8"	10.6"	0.0"	- 18.7"
TRAJ: 600 yd. zero	- 1.5"	11.0"	19.8"	24.2"	23.1"	15.7"	0.0"
VELOCITY (fps)	3300	3013	2740	2482	2241	2017	1809
ENERGY (ft. lbs.)	2661	2217	1834	1505	1227	994	800
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.5"	- 22.5"	- 42.4"	- 71.1"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.9"	- 17.7"	- 36.4"	- 63.9"
TRAJ: 300 yd. zero	- 1.5"	3.2"	3.9"	0.0"	- 9.8"	- 26.5"	- 52.0"
TRAJ: 400 yd. zero	- 1.5"	5.6"	8.9"	7.4"	0.0"	- 14.2"	- 37.3"
TRAJ: 500 yd. zero	- 1.5"	8.5"	14.6"	15.9"	11.4"	0.0"	- 20.2"
TRAJ: 600 yd. zero	- 1.5"	11.9"	21.3"	26.0"	24.9"	16.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2918	2650	2397	2162	1944	1742
ENERGY (ft. lbs.)	2502	2080	1715	1404	1142	923	742
TRAJ: 100 yds. zero	- 1.5"	0.0"	- 2.6"	- 10.3"	- 24.1"	- 45.5"	- 76.5"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.4"	- 18.8"	- 38.9"	- 68.5"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.3"	0.0"	- 10.3"	- 28.2"	- 55.7"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.4"	7.7"	0.0"	- 15.3"	- 40.3"
TRAJ: 500 yd. zero	- 1.5"	9.1"	15.6"	16.9"	12.3"	0.0"	- 21.8"
TRAJ: 600 yd. zero	- 1.5"	12.8"	22.9"	27.9"	26.9"	18.2"	0.0"
VELOCITY (fps)	3100	2823	2560	2313	2084	1872	1677
ENERGY (ft. lbs.)	2348	1946	1601	1308	1062	856	687
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.9"	- 11.3"	- 26.3"	- 49.5"	- 83.2"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.9"	- 20.4"	- 42.1"	- 74.4"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.6"	0.0"	- 11.1"	- 30.5"	- 60.5"
TRAJ: 400 yd. zero	- 1.5"	6.6"	10.2"	8.4"	0.0"	- 16.6"	- 43.7"
TRAJ: 500 yd. zero	- 1.5"	9.9"	16.9"	18.3"	13.3"	0.0"	- 23.8"
TRAJ: 600 yd. zero	- 1.5"	13.9"	24.8"	30.3"	29.2"	19.9"	0.0"
VELOCITY (fps)	3000	2728	2470	2230	2007	1800	1612
ENERGY (ft. lbs.)	2199	1818	1491	1215	984	792	635
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 12.2"	- 28.4"	- 53.5"	- 89.4"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.3"	- 21.8"	- 45.3"	- 79.6"
TRAJ: 300 yd. zero	- 1.5"	4.1"	4.9"	0.0"	- 12.0"	- 33.1"	- 64.9"
TRAJ: 400 yd. zero	- 1.5"	7.1"	10.9"	9.1"	0.0"	- 18.0"	- 46.8"
TRAJ: 500 yd. zero	- 1.5"	10.7"	18.1"	19.9"	14.4"	0.0"	- 25.2"
TRAJ: 600 yd. zero	- 1.5"	14.9"	26.5"	32.5"	31.2"	21.0"	0.0"
VELOCITY (fps)	2900	2633	2382	2148	1931	1730	1549
ENERGY (ft. lbs.)	2055	1694	1386	1127	911	731	587
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 13.5"	- 31.1"	- 58.6"	- 98.1"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.0"	- 23.8"	- 49.4"	- 87.1"
TRAJ: 300 yd. zero	- 1.5"	4.5"	5.3"	0.0"	- 13.1"	- 36.0"	- 71.0"
TRAJ: 400 yd. zero	- 1.5"	7.8"	11.9"	9.9"	0.0"	- 19.6"	- 51.3"
TRAJ: 500 yd. zero	- 1.5"	11.7"	19.8"	21.7"	15.7"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	16.4"	29.0"	35.5"	34.3"	23.2"	0.0"
VELOCITY (fps)	2800	2538	2294	2066	1855	1661	1478
ENERGY (ft. lbs.)	1915	1574	1285	1043	840	674	534
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.6"	- 33.9"	- 63.2"	- 105.3"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.7"	- 26.0"	- 53.3"	- 93.5"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.8"	0.0"	- 14.3"	- 38.7"	- 75.9"
TRAJ: 400 yd. zero	- 1.5"	8.5"	13.0"	10.7"	0.0"	- 20.8"	- 54.4"
TRAJ: 500 yd. zero	- 1.5"	12.6"	21.3"	23.2"	16.7"	0.0"	- 29.4"
TRAJ: 600 yd. zero	- 1.5"	17.6"	31.2"	38.0"	36.3"	24.6"	0.0"

**270 CALIBER (.277" Dia.) 130 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .374

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3122	2856	2604	2366	2144	1937
ENERGY (ft. lbs.)	3338	2813	2355	1957	1616	1327	1084
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.7"	- 20.4"	- 38.6"	- 64.5"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.4"	- 16.1"	- 33.1"	- 58.0"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.6"	0.0"	- 8.8"	- 24.1"	- 47.1"
TRAJ: 400 yd. zero	- 1.5"	5.1"	8.1"	6.6"	0.0"	- 13.0"	- 33.8"
TRAJ: 500 yd. zero	- 1.5"	7.7"	13.3"	14.5"	10.4"	0.0"	- 18.2"
TRAJ: 600 yd. zero	- 1.5"	10.8"	19.4"	23.6"	22.6"	15.2"	0.0"
VELOCITY (fps)	3300	3026	2765	2518	2286	2069	1868
ENERGY (ft. lbs.)	3144	2644	2208	1830	1509	1236	1007
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.4"	- 22.1"	- 41.7"	- 69.8"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.8"	- 17.3"	- 35.6"	- 62.4"
TRAJ: 300 yd. zero	- 1.5"	3.2"	3.9"	0.0"	- 9.5"	- 25.9"	- 50.7"
TRAJ: 400 yd. zero	- 1.5"	5.5"	8.7"	7.2"	0.0"	- 14.0"	- 36.4"
TRAJ: 500 yd. zero	- 1.5"	8.3"	14.3"	15.6"	11.2"	0.0"	- 19.5"
TRAJ: 600 yd. zero	- 1.5"	11.6"	20.8"	25.4"	24.3"	16.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2931	2675	2433	2206	1995	1799
ENERGY (ft. lbs.)	2957	2480	2066	1709	1405	1149	934
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.3"	- 24.0"	- 45.1"	- 75.2"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.3"	- 18.6"	- 38.4"	- 67.2"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.2"	0.0"	- 10.2"	- 27.9"	- 54.6"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.3"	7.7"	0.0"	- 15.1"	- 39.2"
TRAJ: 500 yd. zero	- 1.5"	9.0"	15.4"	16.8"	12.1"	0.0"	- 21.0"
TRAJ: 600 yd. zero	- 1.5"	12.5"	22.4"	27.3"	26.1"	17.6"	0.0"
VELOCITY (fps)	3100	2836	2584	2348	2127	1922	1731
ENERGY (ft. lbs.)	2775	2322	1928	1592	1307	1066	865
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.9"	- 11.2"	- 26.1"	- 48.9"	- 81.6"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.8"	- 20.2"	- 41.6"	- 72.7"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.6"	0.0"	- 11.1"	- 30.2"	- 59.1"
TRAJ: 400 yd. zero	- 1.5"	6.5"	10.1"	8.3"	0.0"	- 16.3"	- 42.4"
TRAJ: 500 yd. zero	- 1.5"	9.8"	16.6"	18.1"	13.1"	0.0"	- 22.8"
TRAJ: 600 yd. zero	- 1.5"	13.6"	24.3"	29.6"	28.3"	19.0"	0.0"
VELOCITY (fps)	3000	2740	2494	2264	2049	1849	1665
ENERGY (ft. lbs.)	2599	2168	1796	1480	1212	987	800
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 12.3"	- 28.5"	- 53.2"	- 87.9"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.4"	- 21.9"	- 45.1"	- 78.1"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.0"	0.0"	- 12.0"	- 32.7"	- 63.2"
TRAJ: 400 yd. zero	- 1.5"	7.1"	11.0"	9.0"	0.0"	- 17.6"	- 45.2"
TRAJ: 500 yd. zero	- 1.5"	10.7"	18.0"	19.6"	14.1"	0.0"	- 24.0"
TRAJ: 600 yd. zero	- 1.5"	14.7"	26.1"	31.6"	30.1"	20.0"	0.0"
VELOCITY (fps)	2900	2645	2405	2181	1971	1777	1600
ENERGY (ft. lbs.)	2428	2021	1670	1373	1122	911	739
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 13.3"	- 30.3"	- 56.4"	- 94.0"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.8"	- 23.0"	- 47.2"	- 83.0"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.2"	0.0"	- 12.6"	- 34.2"	- 67.4"
TRAJ: 400 yd. zero	- 1.5"	7.6"	11.5"	9.5"	0.0"	- 18.4"	- 48.4"
TRAJ: 500 yd. zero	- 1.5"	11.3"	18.9"	20.5"	14.8"	0.0"	- 26.3"
TRAJ: 600 yd. zero	- 1.5"	15.7"	27.7"	33.7"	32.3"	22.0"	0.0"
VELOCITY (fps)	2800	2551	2316	2098	1894	1706	1536
ENERGY (ft. lbs.)	2264	1878	1549	1271	1036	840	681
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.4"	- 32.9"	- 61.3"	- 101.5"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.5"	- 25.1"	- 51.5"	- 89.7"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.7"	0.0"	- 13.7"	- 37.3"	- 72.6"
TRAJ: 400 yd. zero	- 1.5"	8.2"	12.6"	10.3"	0.0"	- 20.1"	- 52.0"
TRAJ: 500 yd. zero	- 1.5"	12.3"	20.6"	22.4"	16.1"	0.0"	- 27.8"
TRAJ: 600 yd. zero	- 1.5"	16.9"	29.9"	36.3"	34.7"	23.2"	0.0"

## 270 CALIBER (.277" Dia.) 140 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .261 BALLISTIC COEFFICIENT: .496

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3092	2892	2699	2514	2338	2170
ENERGY (ft. lbs.)	3386	2973	2601	2265	1965	1699	1465
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.2"	- 8.7"	- 20.3"	- 37.5"	- 61.2"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.3"	- 15.7"	- 31.8"	- 54.4"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.6"	0.0"	- 8.6"	- 22.9"	- 43.7"
TRAJ: 400 yd. zero	- 1.5"	5.1"	7.9"	6.5"	0.0"	- 12.1"	- 30.7"
TRAJ: 500 yd. zero	- 1.5"	7.5"	12.7"	13.8"	9.7"	0.0"	- 16.1"
TRAJ: 600 yd. zero	- 1.5"	10.2"	18.1"	21.9"	20.5"	13.5"	0.0"
VELOCITY (fps)	3200	2996	2799	2610	2429	2257	2094
ENERGY (ft. lbs.)	3184	2791	2436	2118	1834	1584	1363
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.4"	- 21.7"	- 40.1"	- 65.4"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.6"	- 16.7"	- 33.9"	- 57.9"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.8"	0.0"	- 9.2"	- 24.4"	- 46.5"
TRAJ: 400 yd. zero	- 1.5"	5.4"	8.4"	6.9"	0.0"	- 12.9"	- 32.7"
TRAJ: 500 yd. zero	- 1.5"	8.0"	13.6"	14.7"	10.4"	0.0"	- 17.2"
TRAJ: 600 yd. zero	- 1.5"	10.9"	19.3"	23.3"	21.8"	14.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2899	2706	2521	2344	2177	2018
ENERGY (ft. lbs.)	2988	2614	2277	1976	1709	1473	1266
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 10.4"	- 23.7"	- 43.5"	- 70.6"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.3"	- 18.3"	- 36.7"	- 62.4"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.2"	0.0"	- 9.8"	- 26.1"	- 49.7"
TRAJ: 400 yd. zero	- 1.5"	5.9"	9.2"	7.4"	0.0"	- 13.8"	- 34.9"
TRAJ: 500 yd. zero	- 1.5"	8.7"	14.7"	15.7"	11.1"	0.0"	- 18.3"
TRAJ: 600 yd. zero	- 1.5"	11.8"	20.8"	24.9"	23.3"	15.3"	0.0"
VELOCITY (fps)	3000	2803	2614	2432	2260	2097	1942
ENERGY (ft. lbs.)	2799	2443	2124	1840	1589	1367	1173
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.9"	- 11.2"	- 25.5"	- 46.7"	- 75.7"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.8"	- 19.6"	- 39.3"	- 66.8"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.5"	0.0"	- 10.5"	- 28.0"	- 53.2"
TRAJ: 400 yd. zero	- 1.5"	6.4"	9.8"	7.9"	0.0"	- 14.7"	- 37.3"
TRAJ: 500 yd. zero	- 1.5"	9.4"	15.7"	16.8"	11.8"	0.0"	- 19.6"
TRAJ: 600 yd. zero	- 1.5"	12.6"	22.3"	26.6"	24.9"	16.4"	0.0"
VELOCITY (fps)	2900	2707	2521	2345	2177	2018	1867
ENERGY (ft. lbs.)	2615	2278	1977	1709	1474	1266	1084
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.5"	- 28.0"	- 50.9"	- 83.1"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.3"	- 21.1"	- 42.3"	- 72.7"
TRAJ: 300 yd. zero	- 1.5"	4.2"	4.9"	0.0"	- 11.3"	- 30.0"	- 58.0"
TRAJ: 400 yd. zero	- 1.5"	7.0"	10.6"	8.5"	0.0"	- 15.8"	- 41.0"
TRAJ: 500 yd. zero	- 1.5"	10.2"	16.9"	18.0"	12.7"	0.0"	- 22.0"
TRAJ: 600 yd. zero	- 1.5"	13.9"	24.3"	29.0"	27.4"	18.3"	0.0"
VELOCITY (fps)	2800	2611	2430	2258	2094	1940	1793
ENERGY (ft. lbs.)	2438	2119	1835	1585	1364	1170	1000
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.7"	- 13.6"	- 30.4"	- 55.0"	- 89.7"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 7.9"	- 22.8"	- 45.5"	- 78.3"
TRAJ: 300 yd. zero	- 1.5"	4.6"	5.3"	0.0"	- 12.2"	- 32.3"	- 62.4"
TRAJ: 400 yd. zero	- 1.5"	7.6"	11.4"	9.2"	0.0"	- 17.0"	- 44.0"
TRAJ: 500 yd. zero	- 1.5"	11.0"	18.2"	19.4"	13.6"	0.0"	- 23.6"
TRAJ: 600 yd. zero	- 1.5"	15.0"	26.1"	31.2"	29.4"	19.7"	0.0"
VELOCITY (fps)	2700	2515	2339	2171	2012	1862	1720
ENERGY (ft. lbs.)	2267	1966	1701	1466	1259	1078	920
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 14.9"	- 33.0"	- 60.5"	- 98.3"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 8.6"	- 24.6"	- 50.0"	- 85.7"
TRAJ: 300 yd. zero	- 1.5"	5.0"	5.8"	0.0"	- 13.1"	- 35.7"	- 68.5"
TRAJ: 400 yd. zero	- 1.5"	8.3"	12.3"	9.9"	0.0"	- 19.2"	- 48.7"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.0"	21.4"	15.4"	0.0"	- 25.6"
TRAJ: 600 yd. zero	- 1.5"	16.4"	28.6"	34.3"	32.5"	21.4"	0.0"
VELOCITY (fps)	2600	2420	2248	2085	1931	1785	1649
ENERGY (ft. lbs.)	2102	1820	1572	1352	1160	991	846
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 16.3"	- 36.0"	- 65.8"	- 107.1"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 9.3"	- 26.7"	- 54.2"	- 93.2"
TRAJ: 300 yd. zero	- 1.5"	5.5"	6.2"	0.0"	- 14.2"	- 38.6"	- 74.4"
TRAJ: 400 yd. zero	- 1.5"	9.0"	13.4"	10.7"	0.0"	- 20.7"	- 53.0"
TRAJ: 500 yd. zero	- 1.5"	13.2"	21.7"	23.2"	16.6"	0.0"	- 28.1"
TRAJ: 600 yd. zero	- 1.5"	17.9"	31.1"	37.2"	35.4"	23.4"	0.0"
VELOCITY (fps)	2500	2325	2158	2000	1850	1709	1579
ENERGY (ft. lbs.)	1943	1680	1448	1244	1064	909	776
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 17.9"	- 39.4"	- 72.0"	- 117.3"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 10.2"	- 29.0"	- 59.0"	- 101.8"
TRAJ: 300 yd. zero	- 1.5"	6.0"	6.8"	0.0"	- 15.4"	- 42.0"	- 81.4"
TRAJ: 400 yd. zero	- 1.5"	9.9"	14.5"	11.6"	0.0"	- 22.7"	- 58.2"
TRAJ: 500 yd. zero	- 1.5"	14.4"	23.6"	25.3"	18.2"	0.0"	- 30.9"
TRAJ: 600 yd. zero	- 1.5"	19.6"	34.0"	40.7"	38.8"	25.8"	0.0"



**270 CALIBER (.277" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .279 BALLISTIC COEFFICIENT: .443

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2972	2753	2544	2345	2158	1982
ENERGY (ft. lbs.)	3412	2943	2525	2156	1833	1552	1308
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.6"	- 22.2"	- 41.4"	- 68.3"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.8"	- 17.2"	- 35.1"	- 60.9"
TRAJ: 300 yd. zero	- 1.5"	3.2"	3.9"	0.0"	- 9.4"	- 25.4"	- 49.1"
TRAJ: 400 yd. zero	- 1.5"	5.6"	8.6"	7.1"	0.0"	- 13.6"	- 35.0"
TRAJ: 500 yd. zero	- 1.5"	8.3"	14.1"	15.2"	10.9"	0.0"	- 18.6"
TRAJ: 600 yd. zero	- 1.5"	11.4"	20.3"	24.6"	23.4"	15.6"	0.0"
VELOCITY (fps)	3100	2876	2661	2456	2263	2080	1909
ENERGY (ft. lbs.)	3202	2756	2359	2010	1706	1442	1214
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 10.4"	- 24.0"	- 44.6"	- 73.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.3"	- 18.5"	- 37.7"	- 65.3"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.2"	0.0"	- 10.1"	- 27.2"	- 52.7"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.3"	7.6"	0.0"	- 14.6"	- 37.5"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.1"	16.4"	11.7"	0.0"	- 20.0"
TRAJ: 600 yd. zero	- 1.5"	12.3"	21.8"	26.4"	25.0"	16.7"	0.0"
VELOCITY (fps)	3000	2780	2569	2370	2181	2003	1836
ENERGY (ft. lbs.)	2998	2575	2199	1871	1585	1337	1123
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 11.5"	- 26.3"	- 48.6"	- 79.8"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 6.8"	- 20.0"	- 40.7"	- 70.3"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.6"	0.0"	- 10.8"	- 29.3"	- 56.6"
TRAJ: 400 yd. zero	- 1.5"	6.6"	10.0"	8.2"	0.0"	- 15.7"	- 40.3"
TRAJ: 500 yd. zero	- 1.5"	9.7"	16.3"	17.6"	12.6"	0.0"	- 21.5"
TRAJ: 600 yd. zero	- 1.5"	13.3"	23.5"	28.3"	26.9"	17.9"	0.0"
VELOCITY (fps)	2900	2684	2478	2284	2100	1927	1784
ENERGY (ft. lbs.)	2802	2400	2046	1737	1469	1237	1037
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.6"	- 28.6"	- 52.6"	- 86.4"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.4"	- 21.6"	- 43.9"	- 75.9"
TRAJ: 300 yd. zero	- 1.5"	4.2"	4.9"	0.0"	- 11.7"	- 31.6"	- 61.1"
TRAJ: 400 yd. zero	- 1.5"	7.2"	10.8"	8.8"	0.0"	- 16.9"	- 43.5"
TRAJ: 500 yd. zero	- 1.5"	10.5"	17.6"	19.0"	13.5"	0.0"	- 23.2"
TRAJ: 600 yd. zero	- 1.5"	14.4"	25.3"	30.6"	29.0"	19.3"	0.0"
VELOCITY (fps)	2800	2588	2388	2198	2019	1851	1694
ENERGY (ft. lbs.)	2612	2232	1899	1610	1359	1142	956
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 13.8"	- 31.1"	- 57.2"	- 93.9"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.0"	- 23.4"	- 47.5"	- 82.3"
TRAJ: 300 yd. zero	- 1.5"	4.6"	5.4"	0.0"	- 12.7"	- 34.1"	- 66.2"
TRAJ: 400 yd. zero	- 1.5"	7.8"	11.7"	9.5"	0.0"	- 18.2"	- 47.1"
TRAJ: 500 yd. zero	- 1.5"	11.5"	19.0"	20.5"	14.6"	0.0"	- 25.2"
TRAJ: 600 yd. zero	- 1.5"	15.7"	27.4"	33.1"	31.5"	21.1"	0.0"
VELOCITY (fps)	2700	2493	2298	2113	1939	1776	1625
ENERGY (ft. lbs.)	2429	2071	1759	1488	1253	1051	880
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 15.2"	- 34.0"	- 62.3"	- 102.6"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 8.7"	- 25.4"	- 51.5"	- 89.6"
TRAJ: 300 yd. zero	- 1.5"	5.1"	5.8"	0.0"	- 13.7"	- 37.0"	- 72.1"
TRAJ: 400 yd. zero	- 1.5"	8.5"	12.7"	10.3"	0.0"	- 19.7"	- 51.5"
TRAJ: 500 yd. zero	- 1.5"	12.5"	20.6"	22.2"	15.8"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	17.1"	29.9"	36.1"	34.3"	23.1"	0.0"
VELOCITY (fps)	2600	2399	2208	2029	1860	1703	1558
ENERGY (ft. lbs.)	2252	1917	1625	1372	1153	966	809
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 16.7"	- 37.2"	- 68.3"	- 111.0"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.5"	- 27.6"	- 56.2"	- 96.6"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.4"	0.0"	- 14.9"	- 40.3"	- 77.6"
TRAJ: 400 yd. zero	- 1.5"	9.3"	13.8"	11.2"	0.0"	- 21.6"	- 55.1"
TRAJ: 500 yd. zero	- 1.5"	13.7"	22.5"	24.2"	17.3"	0.0"	- 29.1"
TRAJ: 600 yd. zero	- 1.5"	18.5"	32.2"	38.8"	36.8"	24.3"	0.0"
VELOCITY (fps)	2500	2304	2119	1945	1781	1630	1482
ENERGY (ft. lbs.)	2082	1769	1496	1261	1057	886	732
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 18.0"	- 40.4"	- 74.5"	- 121.6"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 10.4"	- 30.2"	- 61.7"	- 106.3"
TRAJ: 300 yd. zero	- 1.5"	6.0"	6.9"	0.0"	- 16.3"	- 44.3"	- 85.4"
TRAJ: 400 yd. zero	- 1.5"	10.1"	15.1"	12.2"	0.0"	- 23.9"	- 60.9"
TRAJ: 500 yd. zero	- 1.5"	14.9"	24.7"	26.6"	19.2"	0.0"	- 32.1"
TRAJ: 600 yd. zero	- 1.5"	20.3"	35.4"	42.7"	40.6"	26.8"	0.0"

## 270 CALIBER (.277" Dia.) 150 GRAIN ROUND NOSE

SECTIONAL DENSITY: .279 BALLISTIC COEFFICIENT: .259

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2816	2459	2134	1841	1583	1351
ENERGY (ft. lbs.)	3412	2641	2014	1518	1130	834	608
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.7"	-28.3"	-55.2"	-96.0"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.3"	-22.4"	-47.8"	-87.0"
TRAJ: 300 yd. zero	-1.5"	3.9"	4.9"	0.0"	-12.6"	-35.6"	-72.4"
TRAJ: 400 yd. zero	-1.5"	7.1"	11.2"	9.5"	0.0"	-19.8"	-53.4"
TRAJ: 500 yd. zero	-1.5"	11.1"	19.1"	21.4"	15.8"	0.0"	-29.6"
TRAJ: 600 yd. zero	-1.5"	16.0"	29.0"	36.2"	35.6"	24.7"	0.0"
VELOCITY (fps)	3100	2722	2374	2057	1772	1513	1294
ENERGY (ft. lbs.)	3202	2469	1877	1410	1046	763	558
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.9"	-31.0"	-60.1"	-104.5"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-8.0"	-24.5"	-52.0"	-94.7"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.3"	0.0"	-13.8"	-38.6"	-78.7"
TRAJ: 400 yd. zero	-1.5"	7.8"	12.3"	10.4"	0.0"	-21.3"	-57.8"
TRAJ: 500 yd. zero	-1.5"	12.0"	20.8"	23.2"	17.1"	0.0"	-32.3"
TRAJ: 600 yd. zero	-1.5"	17.4"	31.6"	39.4"	38.6"	26.9"	0.0"
VELOCITY (fps)	3000	2629	2289	1981	1704	1455	1248
ENERGY (ft. lbs.)	2998	2303	1746	1307	968	705	519
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-14.1"	-33.7"	-65.1"	-112.8"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.5"	-26.3"	-55.9"	-101.7"
TRAJ: 300 yd. zero	-1.5"	4.7"	5.7"	0.0"	-14.8"	-41.6"	-84.6"
TRAJ: 400 yd. zero	-1.5"	8.4"	13.2"	11.2"	0.0"	-23.0"	-62.3"
TRAJ: 500 yd. zero	-1.5"	13.0"	22.4"	25.0"	18.4"	0.0"	-34.6"
TRAJ: 600 yd. zero	-1.5"	18.8"	33.9"	42.3"	41.5"	28.9"	0.0"
VELOCITY (fps)	2900	2537	2205	1905	1638	1398	1205
ENERGY (ft. lbs.)	2802	2144	1620	1209	893	651	483
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-15.2"	-36.3"	-70.3"	-122.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.2"	-28.3"	-60.1"	-110.0"
TRAJ: 300 yd. zero	-1.5"	5.1"	6.1"	0.0"	-16.0"	-44.8"	-91.6"
TRAJ: 400 yd. zero	-1.5"	9.1"	14.2"	12.0"	0.0"	-24.8"	-67.6"
TRAJ: 500 yd. zero	-1.5"	14.1"	24.1"	26.9"	19.9"	0.0"	-37.8"
TRAJ: 600 yd. zero	-1.5"	20.4"	36.7"	45.8"	45.1"	31.6"	0.0"
VELOCITY (fps)	2800	2445	2122	1830	1573	1343	1166
ENERGY (ft. lbs.)	2612	1991	1500	1115	824	601	453
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.8"	-39.8"	-76.7"	-132.5"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.1"	-30.9"	-65.6"	-119.2"
TRAJ: 300 yd. zero	-1.5"	5.6"	6.8"	0.0"	-17.3"	-48.6"	-98.8"
TRAJ: 400 yd. zero	-1.5"	10.0"	15.5"	13.0"	0.0"	-26.8"	-72.7"
TRAJ: 500 yd. zero	-1.5"	15.3"	26.2"	29.2"	21.5"	0.0"	-40.4"
TRAJ: 600 yd. zero	-1.5"	22.1"	39.7"	49.4"	48.5"	33.7"	0.0"
VELOCITY (fps)	2700	2353	2039	1756	1499	1282	1126
ENERGY (ft. lbs.)	2429	1845	1385	1027	748	548	422
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-18.2"	-43.0"	-83.4"	-144.1"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.9"	-33.3"	-71.2"	-129.5"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.3"	0.0"	-18.6"	-52.9"	-107.5"
TRAJ: 400 yd. zero	-1.5"	10.8"	16.7"	14.0"	0.0"	-29.6"	-79.5"
TRAJ: 500 yd. zero	-1.5"	16.7"	28.5"	31.8"	23.7"	0.0"	-43.9"
TRAJ: 600 yd. zero	-1.5"	24.0"	43.2"	53.8"	53.0"	36.6"	0.0"
VELOCITY (fps)	2600	2262	1957	1683	1437	1234	1090
ENERGY (ft. lbs.)	2252	1705	1276	944	688	507	396
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-20.2"	-47.3"	-91.6"	-157.4"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.9"	-36.3"	-77.8"	-140.8"
TRAJ: 300 yd. zero	-1.5"	6.7"	8.0"	0.0"	-20.4"	-57.9"	-116.9"
TRAJ: 400 yd. zero	-1.5"	11.8"	18.2"	15.3"	0.0"	-32.4"	-86.3"
TRAJ: 500 yd. zero	-1.5"	18.3"	31.1"	34.8"	26.0"	0.0"	-47.4"
TRAJ: 600 yd. zero	-1.5"	26.2"	47.0"	58.5"	57.6"	39.5"	0.0"
VELOCITY (fps)	2500	2172	1875	1612	1376	1189	1060
ENERGY (ft. lbs.)	2082	1571	1171	865	630	471	375
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-22.2"	-51.9"	-99.8"	-170.4"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-13.1"	-39.7"	-84.6"	-152.1"
TRAJ: 300 yd. zero	-1.5"	7.4"	8.7"	0.0"	-22.3"	-62.7"	-125.9"
TRAJ: 400 yd. zero	-1.5"	13.0"	19.9"	16.7"	0.0"	-34.8"	-92.4"
TRAJ: 500 yd. zero	-1.5"	20.0"	33.9"	37.7"	27.9"	0.0"	-50.5"
TRAJ: 600 yd. zero	-1.5"	28.4"	50.7"	63.0"	61.6"	42.2"	0.0"



**7 MM (.284" Dia.) 120 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .213 BALLISTIC COEFFICIENT: .378

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3220	2953	2698	2457	2231	2021
ENERGY (ft. lbs.)	3265	2763	2323	1940	1609	1327	1088
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.9"	- 7.8"	- 18.7"	- 35.7"	- 59.8"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 4.9"	- 14.9"	- 30.9"	- 54.1"
TRAJ: 300 yd. zero	- 1.5"	2.6"	3.3"	0.0"	- 8.3"	- 22.6"	- 44.1"
TRAJ: 400 yd. zero	- 1.5"	4.7"	7.5"	6.2"	0.0"	- 12.2"	- 31.6"
TRAJ: 500 yd. zero	- 1.5"	7.1"	12.4"	13.6"	9.8"	0.0"	- 17.0"
TRAJ: 600 yd. zero	- 1.5"	10.0"	18.0"	22.1"	21.1"	14.2"	0.0"
VELOCITY (fps)	3400	3124	2862	2611	2376	2156	1950
ENERGY (ft. lbs.)	3081	2602	2182	1818	1504	1238	1013
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.6"	- 20.5"	- 38.7"	- 64.7"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.4"	- 16.2"	- 33.4"	- 58.3"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.7"	0.0"	- 8.9"	- 24.2"	- 47.4"
TRAJ: 400 yd. zero	- 1.5"	5.1"	8.1"	6.7"	0.0"	- 13.1"	- 34.0"
TRAJ: 500 yd. zero	- 1.5"	7.8"	13.4"	14.6"	10.5"	0.0"	- 18.2"
TRAJ: 600 yd. zero	- 1.5"	10.8"	19.5"	23.7"	22.7"	15.2"	0.0"
VELOCITY (fps)	3300	3029	2771	2525	2295	2080	1880
ENERGY (ft. lbs.)	2902	2445	2046	1700	1404	1154	942
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.4"	- 22.1"	- 41.3"	- 69.2"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.9"	- 17.4"	- 35.4"	- 62.1"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.9"	0.0"	- 9.6"	- 25.6"	- 50.3"
TRAJ: 400 yd. zero	- 1.5"	5.5"	8.7"	7.2"	0.0"	- 13.6"	- 35.9"
TRAJ: 500 yd. zero	- 1.5"	8.3"	14.2"	15.4"	10.9"	0.0"	- 19.5"
TRAJ: 600 yd. zero	- 1.5"	11.5"	20.7"	25.2"	24.0"	16.3"	0.0"
VELOCITY (fps)	3200	2934	2680	2440	2215	2006	1811
ENERGY (ft. lbs.)	2729	2294	1914	1587	1308	1072	874
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 10.0"	- 23.4"	- 43.9"	- 73.7"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.1"	- 18.2"	- 37.4"	- 65.9"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.1"	0.0"	- 10.0"	- 27.1"	- 53.6"
TRAJ: 400 yd. zero	- 1.5"	5.9"	9.1"	7.5"	0.0"	- 14.6"	- 38.6"
TRAJ: 500 yd. zero	- 1.5"	8.8"	15.0"	16.3"	11.7"	0.0"	- 21.0"
TRAJ: 600 yd. zero	- 1.5"	12.3"	22.0"	26.8"	25.8"	17.5"	0.0"
VELOCITY (fps)	3100	2838	2589	2355	2136	1932	1742
ENERGY (ft. lbs.)	2561	2147	1787	1478	1216	995	809
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 10.9"	- 25.4"	- 47.6"	- 79.1"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.8"	- 19.7"	- 40.4"	- 70.5"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.5"	0.0"	- 10.8"	- 29.3"	- 57.1"
TRAJ: 400 yd. zero	- 1.5"	6.4"	9.9"	8.1"	0.0"	- 15.7"	- 40.9"
TRAJ: 500 yd. zero	- 1.5"	9.5"	16.2"	17.6"	12.6"	0.0"	- 21.9"
TRAJ: 600 yd. zero	- 1.5"	13.2"	23.5"	28.6"	27.3"	18.3"	0.0"
VELOCITY (fps)	3000	2743	2499	2271	2058	1859	1676
ENERGY (ft. lbs.)	2399	2006	1665	1375	1129	921	748
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 12.0"	- 27.7"	- 51.8"	- 86.1"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.2"	- 21.3"	- 43.8"	- 76.5"
TRAJ: 300 yd. zero	- 1.5"	4.0"	4.8"	0.0"	- 11.7"	- 31.7"	- 62.0"
TRAJ: 400 yd. zero	- 1.5"	6.9"	10.7"	8.8"	0.0"	- 17.0"	- 44.4"
TRAJ: 500 yd. zero	- 1.5"	10.4"	17.5"	19.0"	13.7"	0.0"	- 23.9"
TRAJ: 600 yd. zero	- 1.5"	14.4"	25.5"	31.0"	29.6"	20.0"	0.0"
VELOCITY (fps)	2900	2648	2410	2187	1980	1786	1610
ENERGY (ft. lbs.)	2241	1869	1548	1275	1045	851	691
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.2"	- 30.3"	- 56.4"	- 94.1"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.9"	- 23.2"	- 47.5"	- 83.4"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.3"	0.0"	- 12.7"	- 34.4"	- 67.6"
TRAJ: 400 yd. zero	- 1.5"	7.6"	11.6"	9.5"	0.0"	- 18.5"	- 48.5"
TRAJ: 500 yd. zero	- 1.5"	11.3"	19.0"	20.6"	14.8"	0.0"	- 26.3"
TRAJ: 600 yd. zero	- 1.5"	15.7"	27.8"	33.8"	32.4"	21.9"	0.0"
VELOCITY (fps)	2800	2553	2321	2105	1903	1715	1546
ENERGY (ft. lbs.)	2090	1737	1436	1180	965	784	637
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.6"	- 33.3"	- 61.8"	- 102.1"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.6"	- 25.3"	- 51.9"	- 90.1"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.8"	0.0"	- 13.8"	- 37.5"	- 72.8"
TRAJ: 400 yd. zero	- 1.5"	8.3"	12.7"	10.4"	0.0"	- 20.2"	- 52.1"
TRAJ: 500 yd. zero	- 1.5"	12.4"	20.8"	22.5"	16.2"	0.0"	- 27.8"
TRAJ: 600 yd. zero	- 1.5"	17.0"	30.1"	36.4"	34.8"	23.2"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2459	2233	2022	1828	1646	1474
ENERGY (ft. lbs.)	1943	1811	1329	1090	889	722	579
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.1"	-36.6"	-68.1"	-111.9"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.4"	-27.7"	-57.0"	-98.5"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.3"	0.0"	-15.0"	-41.2"	-79.6"
TRAJ: 400 yd. zero	-1.5"	9.2"	13.9"	11.3"	0.0"	-22.3"	-56.9"
TRAJ: 500 yd. zero	-1.5"	13.6"	22.8"	24.7"	17.9"	0.0"	-30.1"
TRAJ: 600 yd. zero	-1.5"	18.7"	32.8"	39.8"	38.0"	25.1"	0.0"
VELOCITY (fps)	2600	2365	2146	1941	1750	1578	1413
ENERGY (ft. lbs.)	1802	1491	1227	1004	817	663	532
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-17.1"	-39.4"	-73.0"	-121.0"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.0"	-29.8"	-61.1"	-106.7"
TRAJ: 300 yd. zero	-1.5"	5.7"	6.7"	0.0"	-16.5"	-44.4"	-86.6"
TRAJ: 400 yd. zero	-1.5"	9.9"	14.9"	12.4"	0.0"	-23.8"	-61.8"
TRAJ: 500 yd. zero	-1.5"	14.6"	24.5"	26.7"	19.0"	0.0"	-33.3"
TRAJ: 600 yd. zero	-1.5"	20.2"	35.6"	43.3"	41.3"	27.8"	0.0"

**7 MM (.284" Dia.) 120 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .213 BALLISTIC COEFFICIENT: .343

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3192	2900	2623	2363	2122	1899
ENERGY (ft. lbs.)	3265	2716	2241	1833	1488	1200	961
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.9"	-8.1"	-19.4"	-37.3"	-62.8"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.2"	-15.5"	-32.3"	-56.9"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.5"	0.0"	-8.5"	-23.6"	-46.4"
TRAJ: 400 yd. zero	-1.5"	4.9"	7.8"	6.4"	0.0"	-12.9"	-33.6"
TRAJ: 500 yd. zero	-1.5"	7.5"	12.9"	14.2"	10.4"	0.0"	-18.0"
TRAJ: 600 yd. zero	-1.5"	10.5"	19.0"	23.2"	22.4"	15.1"	0.0"
VELOCITY (fps)	3400	3097	2810	2538	2284	2049	1831
ENERGY (ft. lbs.)	3081	2556	2104	1716	1390	1119	894
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.9"	-21.0"	-40.3"	-67.8"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.8"	-16.6"	-34.8"	-61.2"
TRAJ: 300 yd. zero	-1.5"	3.0"	3.7"	0.0"	-9.1"	-25.4"	-49.9"
TRAJ: 400 yd. zero	-1.5"	5.3"	8.3"	6.9"	0.0"	-13.9"	-36.1"
TRAJ: 500 yd. zero	-1.5"	8.1"	13.9"	15.3"	11.2"	0.0"	-19.4"
TRAJ: 600 yd. zero	-1.5"	11.3"	20.4"	25.0"	24.1"	16.2"	0.0"
VELOCITY (fps)	3300	3002	2720	2453	2206	1978	1765
ENERGY (ft. lbs.)	2902	2402	1971	1604	1297	1041	830
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.7"	-22.8"	-43.1"	-72.8"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.0"	-18.0"	-37.1"	-65.4"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-9.9"	-26.9"	-53.3"
TRAJ: 400 yd. zero	-1.5"	5.7"	9.0"	7.4"	0.0"	-14.5"	-38.4"
TRAJ: 500 yd. zero	-1.5"	8.6"	14.8"	16.2"	11.7"	0.0"	-20.9"
TRAJ: 600 yd. zero	-1.5"	12.1"	21.8"	26.7"	25.6"	17.5"	0.0"
VELOCITY (fps)	3200	2907	2630	2370	2128	1905	1699
ENERGY (ft. lbs.)	2729	2253	1843	1497	1207	967	769
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.6"	-24.9"	-46.8"	-79.0"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.5"	-19.5"	-40.1"	-70.9"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.4"	0.0"	-10.7"	-29.1"	-57.7"
TRAJ: 400 yd. zero	-1.5"	6.2"	9.8"	8.1"	0.0"	-15.7"	-41.6"
TRAJ: 500 yd. zero	-1.5"	9.4"	16.1"	17.5"	12.6"	0.0"	-22.8"
TRAJ: 600 yd. zero	-1.5"	13.2"	23.7"	28.9"	27.8"	19.0"	0.0"
VELOCITY (fps)	3100	2812	2540	2287	2051	1833	1635
ENERGY (ft. lbs.)	2561	2108	1720	1394	1121	896	713
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.4"	-26.9"	-50.6"	-84.8"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.9"	-20.8"	-43.1"	-75.8"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.6"	0.0"	-11.6"	-31.5"	-61.9"
TRAJ: 400 yd. zero	-1.5"	6.7"	10.4"	8.7"	0.0"	-17.0"	-44.5"
TRAJ: 500 yd. zero	-1.5"	10.1"	17.3"	18.9"	13.6"	0.0"	-24.0"
TRAJ: 600 yd. zero	-1.5"	14.1"	25.3"	31.0"	29.7"	20.1"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2718	2452	2204	1975	1763	1572
ENERGY (ft. lbs.)	2399	1968	1602	1295	1039	828	659
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.8"	- 29.0"	- 54.8"	- 92.2"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.5"	- 22.3"	- 46.4"	- 82.2"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.1"	0.0"	- 12.2"	- 33.7"	- 67.0"
TRAJ: 400 yd. zero	- 1.5"	7.3"	11.2"	9.2"	0.0"	- 18.4"	- 48.7"
TRAJ: 500 yd. zero	- 1.5"	11.0"	18.6"	20.3"	14.8"	0.0"	- 26.5"
TRAJ: 600 yd. zero	- 1.5"	15.4"	27.4"	33.5"	32.5"	22.1"	0.0"
VELOCITY (fps)	2900	2623	2363	2122	1899	1694	1501
ENERGY (ft. lbs.)	2241	1834	1489	1201	961	765	601
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 13.6"	- 31.5"	- 59.0"	- 98.9"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.2"	- 24.3"	- 50.0"	- 88.1"
TRAJ: 300 yd. zero	- 1.5"	4.6"	5.5"	0.0"	- 13.3"	- 36.1"	- 71.5"
TRAJ: 400 yd. zero	- 1.5"	7.9"	12.2"	10.0"	0.0"	- 19.5"	- 51.5"
TRAJ: 500 yd. zero	- 1.5"	11.8"	20.0"	21.7"	15.6"	0.0"	- 28.1"
TRAJ: 600 yd. zero	- 1.5"	16.5"	29.4"	35.8"	34.4"	23.4"	0.0"
VELOCITY (fps)	2800	2529	2276	2041	1824	1627	1441
ENERGY (ft. lbs.)	2090	1704	1380	1110	887	705	554
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.0"	- 14.8"	- 34.3"	- 64.5"	- 107.9"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.7"	- 26.2"	- 54.3"	- 95.7"
TRAJ: 300 yd. zero	- 1.5"	5.0"	5.9"	0.0"	- 14.5"	- 39.7"	- 78.2"
TRAJ: 400 yd. zero	- 1.5"	8.6"	13.1"	10.9"	0.0"	- 21.5"	- 56.4"
TRAJ: 500 yd. zero	- 1.5"	12.9"	21.8"	23.9"	17.3"	0.0"	- 30.5"
TRAJ: 600 yd. zero	- 1.5"	18.0"	31.9"	39.1"	37.6"	25.4"	0.0"
VELOCITY (fps)	2700	2435	2189	1961	1750	1561	1383
ENERGY (ft. lbs.)	1943	1580	1277	1025	816	649	510
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.5"	- 16.4"	- 37.9"	- 70.4"	- 117.6"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 9.6"	- 28.8"	- 59.1"	- 104.0"
TRAJ: 300 yd. zero	- 1.5"	5.5"	6.4"	0.0"	- 15.9"	- 43.0"	- 84.7"
TRAJ: 400 yd. zero	- 1.5"	9.5"	14.4"	12.0"	0.0"	- 23.0"	- 60.8"
TRAJ: 500 yd. zero	- 1.5"	14.1"	23.6"	25.8"	18.5"	0.0"	- 33.1"
TRAJ: 600 yd. zero	- 1.5"	19.6"	34.7"	42.4"	40.6"	27.6"	0.0"
VELOCITY (fps)	2600	2342	2103	1881	1678	1486	1318
ENERGY (ft. lbs.)	1802	1462	1178	943	750	589	463
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 17.9"	- 41.0"	- 76.5"	- 128.0"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 10.6"	- 31.2"	- 64.2"	- 113.2"
TRAJ: 300 yd. zero	- 1.5"	6.0"	7.1"	0.0"	- 17.0"	- 46.5"	- 92.0"
TRAJ: 400 yd. zero	- 1.5"	10.3"	15.6"	12.8"	0.0"	- 25.2"	- 66.4"
TRAJ: 500 yd. zero	- 1.5"	15.3"	25.7"	27.9"	20.2"	0.0"	- 36.2"
TRAJ: 600 yd. zero	- 1.5"	21.3"	37.8"	46.0"	44.3"	30.2"	0.0"

## 7 MM (.284" Dia.) 139 GRAIN SPIRE POINT

SECTIONAL DENSITY: .246 BALLISTIC COEFFICIENT: .396

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3137	2885	2645	2418	2204	2005
ENERGY (ft. lbs.)	3569	3037	2569	2160	1804	1500	1241
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.5"	- 20.1"	- 37.6"	- 62.3"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.4"	- 15.8"	- 32.3"	- 55.9"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.6"	0.0"	- 8.6"	- 23.3"	- 45.1"
TRAJ: 400 yd. zero	- 1.5"	5.0"	7.9"	6.5"	0.0"	- 12.5"	- 32.1"
TRAJ: 500 yd. zero	- 1.5"	7.5"	12.9"	14.0"	10.0"	0.0"	- 17.1"
TRAJ: 600 yd. zero	- 1.5"	10.4"	18.6"	22.6"	21.4"	14.3"	0.0"
VELOCITY (fps)	3300	3041	2794	2558	2336	2128	1933
ENERGY (ft. lbs.)	3362	2855	2409	2020	1685	1396	1154
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.3"	- 21.7"	- 40.5"	- 67.0"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.7"	- 17.0"	- 34.6"	- 59.9"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.9"	0.0"	- 9.2"	- 25.0"	- 48.3"
TRAJ: 400 yd. zero	- 1.5"	5.4"	8.5"	7.0"	0.0"	- 13.4"	- 34.4"
TRAJ: 500 yd. zero	- 1.5"	8.1"	13.9"	15.0"	10.7"	0.0"	- 18.3"
TRAJ: 600 yd. zero	- 1.5"	11.2"	20.0"	24.2"	23.0"	15.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2945	2703	2472	2255	2052	1863
ENERGY (ft. lbs.)	3161	2678	2255	1886	1570	1300	1071
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 10.1"	- 23.4"	- 43.7"	- 72.2"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.2"	- 18.3"	- 37.3"	- 64.4"
TRAJ: 300 yd. zero	- 1.5"	3.4"	4.2"	0.0"	- 10.0"	- 26.9"	- 51.9"
TRAJ: 400 yd. zero	- 1.5"	5.9"	9.2"	7.5"	0.0"	- 14.4"	- 36.9"
TRAJ: 500 yd. zero	- 1.5"	8.8"	14.9"	16.2"	11.5"	0.0"	- 19.6"
TRAJ: 600 yd. zero	- 1.5"	12.0"	21.5"	26.0"	24.7"	16.4"	0.0"
VELOCITY (fps)	3100	2850	2611	2386	2175	1977	1793
ENERGY (ft. lbs.)	2967	2508	2105	1758	1460	1207	992
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.0"	- 25.5"	- 47.4"	- 78.1"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.7"	- 19.8"	- 40.2"	- 69.5"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.5"	0.0"	- 10.7"	- 29.0"	- 56.0"
TRAJ: 400 yd. zero	- 1.5"	6.4"	9.9"	8.1"	0.0"	- 15.5"	- 39.8"
TRAJ: 500 yd. zero	- 1.5"	9.5"	16.1"	17.4"	12.4"	0.0"	- 21.1"
TRAJ: 600 yd. zero	- 1.5"	13.0"	23.2"	28.0"	26.6"	17.7"	0.0"
VELOCITY (fps)	3000	2755	2521	2301	2095	1903	1724
ENERGY (ft. lbs.)	2779	2342	1962	1635	1355	1118	917
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 11.8"	- 27.4"	- 51.0"	- 84.1"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 7.0"	- 21.1"	- 43.1"	- 74.7"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.7"	0.0"	- 11.6"	- 31.3"	- 60.5"
TRAJ: 400 yd. zero	- 1.5"	6.9"	10.6"	8.7"	0.0"	- 16.7"	- 43.0"
TRAJ: 500 yd. zero	- 1.5"	10.2"	17.3"	18.8"	13.4"	0.0"	- 22.9"
TRAJ: 600 yd. zero	- 1.5"	14.0"	24.9"	30.3"	28.7"	19.1"	0.0"
VELOCITY (fps)	2900	2659	2431	2217	2016	1829	1656
ENERGY (ft. lbs.)	2596	2183	1824	1517	1255	1033	847
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 12.9"	- 29.9"	- 55.5"	- 91.7"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.7"	- 22.9"	- 46.7"	- 81.2"
TRAJ: 300 yd. zero	- 1.5"	4.3"	5.1"	0.0"	- 12.6"	- 33.9"	- 65.8"
TRAJ: 400 yd. zero	- 1.5"	7.5"	11.5"	9.5"	0.0"	- 18.1"	- 46.8"
TRAJ: 500 yd. zero	- 1.5"	11.1"	18.7"	20.4"	14.5"	0.0"	- 25.1"
TRAJ: 600 yd. zero	- 1.5"	15.3"	27.1"	32.9"	31.2"	20.9"	0.0"
VELOCITY (fps)	2800	2564	2342	2133	1938	1756	1591
ENERGY (ft. lbs.)	2420	2030	1693	1405	1160	952	781
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.2"	- 32.7"	- 60.6"	- 100.4"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.4"	- 24.9"	- 50.8"	- 88.7"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.6"	0.0"	- 13.7"	- 36.8"	- 71.9"
TRAJ: 400 yd. zero	- 1.5"	8.2"	12.5"	10.3"	0.0"	- 19.7"	- 51.3"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.4"	22.1"	15.8"	0.0"	- 27.6"
TRAJ: 600 yd. zero	- 1.5"	16.7"	29.6"	36.0"	34.2"	23.0"	0.0"
VELOCITY (fps)	2700	2469	2253	2050	1861	1685	1526
ENERGY (ft. lbs.)	2251	1883	1567	1298	1069	877	719
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 15.7"	- 35.3"	- 65.6"	- 108.2"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 9.1"	- 26.6"	- 54.9"	- 95.0"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.1"	0.0"	- 14.3"	- 39.6"	- 76.7"
TRAJ: 400 yd. zero	- 1.5"	8.8"	13.3"	10.8"	0.0"	- 21.6"	- 55.1"
TRAJ: 500 yd. zero	- 1.5"	13.2"	22.0"	23.8"	17.3"	0.0"	- 29.1"
TRAJ: 600 yd. zero	- 1.5"	18.0"	31.7"	38.4"	36.8"	24.3"	0.0"
VELOCITY (fps)	2600	2375	2165	1968	1784	1615	1453
ENERGY (ft. lbs.)	2087	1742	1447	1195	982	806	652
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 17.4"	- 38.9"	- 71.6"	- 117.4"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.0"	- 29.1"	- 59.3"	- 102.8"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.7"	0.0"	- 15.7"	- 42.6"	- 82.6"
TRAJ: 400 yd. zero	- 1.5"	9.7"	14.6"	11.8"	0.0"	- 22.9"	- 59.1"
TRAJ: 500 yd. zero	- 1.5"	14.3"	23.8"	25.6"	18.4"	0.0"	- 31.5"
TRAJ: 600 yd. zero	- 1.5"	19.6"	34.3"	41.3"	39.4"	26.3"	0.0"



**7 MM (.284" Dia.) 154 GRAIN SPIRE POINT**  
 SECTIONAL DENSITY: .273 BALLISTIC COEFFICIENT: .425

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2961	2733	2515	2309	2116	1934
ENERGY (ft. lbs.)	3502	3000	2555	2163	1824	1531	1279
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 9.8"	- 22.8"	- 42.3"	- 70.0"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.0"	- 17.8"	- 36.0"	- 62.4"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.0"	0.0"	- 9.7"	- 26.0"	- 50.4"
TRAJ: 400 yd. zero	- 1.5"	5.7"	8.9"	7.3"	0.0"	- 13.8"	- 35.7"
TRAJ: 500 yd. zero	- 1.5"	8.5"	14.4"	15.6"	11.1"	0.0"	- 19.1"
TRAJ: 600 yd. zero	- 1.5"	11.7"	20.8"	25.2"	23.9"	16.0"	0.0"
VELOCITY (fps)	3100	2866	2641	2428	2228	2039	1862
ENERGY (ft. lbs.)	3287	2809	2386	2017	1697	1422	1186
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 10.6"	- 24.7"	- 45.7"	- 75.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.4"	- 19.1"	- 38.8"	- 67.1"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.3"	0.0"	- 10.5"	- 27.9"	- 54.2"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.6"	7.9"	0.0"	- 14.8"	- 38.4"
TRAJ: 500 yd. zero	- 1.5"	9.2"	15.5"	16.8"	11.9"	0.0"	- 20.6"
TRAJ: 600 yd. zero	- 1.5"	12.6"	22.4"	27.1"	25.6"	17.2"	0.0"
VELOCITY (fps)	3000	2770	2550	2342	2147	1963	1790
ENERGY (ft. lbs.)	3078	2624	2224	1876	1576	1318	1097
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 11.6"	- 26.8"	- 49.5"	- 81.8"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 7.0"	- 20.7"	- 41.9"	- 72.4"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.7"	0.0"	- 11.3"	- 30.1"	- 58.4"
TRAJ: 400 yd. zero	- 1.5"	6.7"	10.4"	8.5"	0.0"	- 15.9"	- 41.3"
TRAJ: 500 yd. zero	- 1.5"	9.9"	16.8"	18.1"	12.8"	0.0"	- 22.1"
TRAJ: 600 yd. zero	- 1.5"	13.6"	24.2"	29.2"	27.6"	18.5"	0.0"
VELOCITY (fps)	2900	2674	2459	2257	2066	1888	1721
ENERGY (ft. lbs.)	2877	2446	2069	1742	1460	1219	1013
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.7"	- 29.2"	- 53.8"	- 88.6"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.6"	- 22.4"	- 45.3"	- 78.4"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.1"	0.0"	- 12.2"	- 32.5"	- 63.1"
TRAJ: 400 yd. zero	- 1.5"	7.3"	11.2"	9.2"	0.0"	- 17.2"	- 44.7"
TRAJ: 500 yd. zero	- 1.5"	10.8"	18.1"	19.6"	13.8"	0.0"	- 24.0"
TRAJ: 600 yd. zero	- 1.5"	14.8"	26.1"	31.6"	29.8"	20.1"	0.0"
VELOCITY (fps)	2800	2579	2369	2172	1987	1813	1652
ENERGY (ft. lbs.)	2682	2274	1920	1614	1350	1124	934
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.7"	- 13.9"	- 31.9"	- 58.5"	- 96.6"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.3"	- 24.3"	- 49.1"	- 85.3"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.5"	0.0"	- 13.3"	- 35.2"	- 68.7"
TRAJ: 400 yd. zero	- 1.5"	8.0"	12.2"	10.0"	0.0"	- 18.6"	- 48.7"
TRAJ: 500 yd. zero	- 1.5"	11.7"	19.6"	21.2"	14.9"	0.0"	- 26.3"
TRAJ: 600 yd. zero	- 1.5"	16.1"	28.4"	34.4"	32.5"	22.0"	0.0"
VELOCITY (fps)	2700	2484	2280	2088	1908	1739	1585
ENERGY (ft. lbs.)	2493	2110	1778	1491	1245	1035	859
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.3"	- 34.9"	- 64.0"	- 104.5"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.0"	- 26.5"	- 53.4"	- 91.9"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.0"	0.0"	- 14.4"	- 38.3"	- 73.8"
TRAJ: 400 yd. zero	- 1.5"	8.7"	13.3"	10.8"	0.0"	- 20.3"	- 52.1"
TRAJ: 500 yd. zero	- 1.5"	12.8"	21.4"	23.0"	16.2"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	17.4"	30.6"	36.9"	34.7"	23.1"	0.0"
VELOCITY (fps)	2600	2389	2191	2005	1829	1667	1510
ENERGY (ft. lbs.)	2312	1953	1642	1374	1145	951	779
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 16.9"	- 38.3"	- 70.3"	- 114.9"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.8"	- 28.9"	- 58.5"	- 100.8"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.6"	0.0"	- 15.7"	- 42.0"	- 81.0"
TRAJ: 400 yd. zero	- 1.5"	9.6"	14.5"	11.8"	0.0"	- 22.3"	- 57.4"
TRAJ: 500 yd. zero	- 1.5"	14.1"	23.4"	25.2"	17.9"	0.0"	- 30.6"
TRAJ: 600 yd. zero	- 1.5"	19.2"	33.6"	40.5"	38.3"	25.5"	0.0"
VELOCITY (fps)	2500	2295	2102	1921	1752	1597	1445
ENERGY (ft. lbs.)	2138	1802	1512	1263	1050	872	715
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 18.7"	- 41.5"	- 76.7"	- 125.1"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 10.8"	- 31.0"	- 63.5"	- 109.3"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.2"	0.0"	- 16.5"	- 45.4"	- 87.6"
TRAJ: 400 yd. zero	- 1.5"	10.4"	15.5"	12.4"	0.0"	- 24.7"	- 62.8"
TRAJ: 500 yd. zero	- 1.5"	15.3"	25.4"	27.3"	19.8"	0.0"	- 33.0"
TRAJ: 600 yd. zero	- 1.5"	20.9"	36.5"	43.8"	41.9"	27.6"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2201	2014	1838	1657	1527	1382
ENERGY (ft. lbs.)	1970	1657	1387	1156	960	797	653
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.8"	- 20.7"	- 46.1"	- 83.9"	- 136.5"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 11.9"	- 34.3"	- 69.2"	- 118.8"
TRAJ: 300 yd. zero	- 1.5"	8.9"	8.0"	0.0"	- 18.3"	- 49.3"	- 94.9"
TRAJ: 400 yd. zero	- 1.5"	11.5"	17.2"	13.8"	0.0"	- 26.3"	- 67.3"
TRAJ: 500 yd. zero	- 1.5"	16.8"	27.7"	29.6"	21.1"	0.0"	- 35.7"
TRAJ: 600 yd. zero	- 1.5"	22.8"	39.6"	47.5"	44.9"	29.8"	0.0"
VELOCITY (fps)	2300	2107	1926	1756	1600	1449	1312
ENERGY (ft. lbs.)	1809	1518	1268	1054	876	718	589
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.8"	- 22.6"	- 50.7"	- 92.2"	- 150.7"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 12.6"	- 37.5"	- 75.6"	- 130.8"
TRAJ: 300 yd. zero	- 1.5"	7.5"	8.5"	0.0"	- 20.6"	- 54.5"	- 105.4"
TRAJ: 400 yd. zero	- 1.5"	12.7"	18.8"	15.5"	0.0"	- 28.7"	- 74.5"
TRAJ: 500 yd. zero	- 1.5"	18.4"	30.3"	32.7"	23.0"	0.0"	- 40.0"
TRAJ: 600 yd. zero	- 1.5"	25.1"	43.6"	52.7"	49.7"	33.4"	0.0"

# 7 MM (.284" Dia.) 154 GRAIN ROUND NOSE

SECTIONAL DENSITY: .273 BALLISTIC COEFFICIENT: .256

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2811	2451	2124	1828	1569	1337
ENERGY (ft. lbs.)	3502	2703	2055	1543	1144	842	611
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 11.9"	- 28.9"	- 56.1"	- 97.4"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 7.4"	- 22.8"	- 48.5"	- 88.3"
TRAJ: 300 yd. zero	- 1.5"	4.0"	5.0"	0.0"	- 12.9"	- 36.1"	- 73.5"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.4"	9.7"	0.0"	- 19.9"	- 54.0"
TRAJ: 500 yd. zero	- 1.5"	11.2"	19.4"	21.7"	15.9"	0.0"	- 30.1"
TRAJ: 600 yd. zero	- 1.5"	16.2"	29.5"	36.8"	36.0"	25.1"	0.0"
VELOCITY (fps)	3100	2718	2366	2047	1760	1500	1281
ENERGY (ft. lbs.)	3287	2527	1914	1433	1059	789	561
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.9"	- 31.0"	- 60.6"	- 105.6"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.9"	- 24.4"	- 52.3"	- 95.6"
TRAJ: 300 yd. zero	- 1.5"	4.3"	5.3"	0.0"	- 13.8"	- 39.0"	- 79.7"
TRAJ: 400 yd. zero	- 1.5"	7.8"	12.2"	10.4"	0.0"	- 21.7"	- 59.0"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.9"	23.4"	17.4"	0.0"	- 32.8"
TRAJ: 600 yd. zero	- 1.5"	17.6"	31.9"	39.9"	39.3"	27.4"	0.0"
VELOCITY (fps)	3000	2625	2281	1971	1692	1442	1236
ENERGY (ft. lbs.)	3078	2357	1780	1328	979	711	522
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 14.1"	- 33.7"	- 65.7"	- 114.2"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.7"	- 26.4"	- 56.6"	- 103.3"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.8"	0.0"	- 14.8"	- 42.0"	- 85.8"
TRAJ: 400 yd. zero	- 1.5"	8.4"	13.2"	11.1"	0.0"	- 23.5"	- 63.6"
TRAJ: 500 yd. zero	- 1.5"	13.1"	22.7"	25.2"	18.8"	0.0"	- 35.4"
TRAJ: 600 yd. zero	- 1.5"	19.0"	34.5"	42.9"	42.4"	29.5"	0.0"
VELOCITY (fps)	2900	2533	2198	1895	1626	1385	1194
ENERGY (ft. lbs.)	2877	2194	1652	1228	904	657	468
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.1"	- 15.5"	- 36.7"	- 71.3"	- 123.7"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.3"	- 28.5"	- 61.0"	- 111.4"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.3"	0.0"	- 16.0"	- 45.4"	- 92.6"
TRAJ: 400 yd. zero	- 1.5"	9.2"	14.3"	12.0"	0.0"	- 25.4"	- 68.6"
TRAJ: 500 yd. zero	- 1.5"	14.3"	24.4"	27.3"	20.3"	0.0"	- 38.1"
TRAJ: 600 yd. zero	- 1.5"	20.6"	37.2"	46.3"	45.7"	31.8"	0.0"
VELOCITY (fps)	2800	2441	2114	1820	1561	1331	1157
ENERGY (ft. lbs.)	2682	2037	1529	1133	834	606	458
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.5"	- 16.8"	- 39.8"	- 77.4"	- 133.7"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.1"	- 30.8"	- 66.1"	- 120.2"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.7"	0.0"	- 17.3"	- 49.3"	- 100.0"
TRAJ: 400 yd. zero	- 1.5"	10.0"	15.4"	13.0"	0.0"	- 27.5"	- 73.9"
TRAJ: 500 yd. zero	- 1.5"	15.5"	26.5"	29.6"	22.1"	0.0"	- 40.8"
TRAJ: 600 yd. zero	- 1.5"	22.3"	40.1"	50.0"	49.3"	34.0"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2349	2032	1746	1488	1272	1113
ENERGY (ft. lbs.)	2493	1888	1412	1043	758	553	424
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.9"	- 18.6"	- 43.8"	- 84.8"	- 146.3"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 11.2"	- 33.9"	- 72.4"	- 131.5"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.5"	0.0"	- 18.9"	- 53.7"	- 109.0"
TRAJ: 400 yd. zero	- 1.5"	11.0"	17.0"	14.2"	0.0"	- 30.0"	- 80.5"
TRAJ: 500 yd. zero	- 1.5"	17.0"	29.0"	32.3"	24.0"	0.0"	- 44.5"
TRAJ: 600 yd. zero	- 1.5"	24.4"	43.8"	54.5"	53.7"	37.1"	0.0"
VELOCITY (fps)	2600	2259	1950	1674	1426	1224	1082
ENERGY (ft. lbs.)	2312	1745	1301	959	696	512	401
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.4"	- 20.4"	- 47.9"	- 92.9"	- 159.3"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 12.2"	- 37.0"	- 79.2"	- 143.0"
TRAJ: 300 yd. zero	- 1.5"	6.8"	8.2"	0.0"	- 20.7"	- 58.9"	- 118.5"
TRAJ: 400 yd. zero	- 1.5"	12.0"	18.5"	15.6"	0.0"	- 32.9"	- 87.4"
TRAJ: 500 yd. zero	- 1.5"	18.6"	31.7"	35.4"	26.4"	0.0"	- 47.8"
TRAJ: 600 yd. zero	- 1.5"	26.6"	47.7"	59.3"	58.3"	39.9"	0.0"
VELOCITY (fps)	2500	2168	1868	1603	1366	1180	1054
ENERGY (ft. lbs.)	2138	1608	1194	879	638	476	380
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.0"	- 22.4"	- 52.2"	- 101.0"	- 172.7"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 13.4"	- 40.2"	- 86.0"	- 154.7"
TRAJ: 300 yd. zero	- 1.5"	7.5"	9.0"	0.0"	- 22.3"	- 63.6"	- 127.9"
TRAJ: 400 yd. zero	- 1.5"	13.1"	20.1"	16.8"	0.0"	- 35.7"	- 94.3"
TRAJ: 500 yd. zero	- 1.5"	20.2"	34.4"	38.2"	28.6"	0.0"	- 51.5"
TRAJ: 600 yd. zero	- 1.5"	28.8"	51.6"	64.0"	62.9"	42.9"	0.0"
VELOCITY (fps)	2400	2078	1787	1533	1308	1141	1027
ENERGY (ft. lbs.)	1970	1476	1092	804	585	445	361
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.8"	- 24.6"	- 57.7"	- 110.5"	- 187.9"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 14.4"	- 44.0"	- 93.3"	- 167.4"
TRAJ: 300 yd. zero	- 1.5"	8.2"	9.6"	0.0"	- 24.8"	- 69.3"	- 138.5"
TRAJ: 400 yd. zero	- 1.5"	14.4"	22.0"	18.6"	0.0"	- 38.3"	- 101.3"
TRAJ: 500 yd. zero	- 1.5"	22.1"	37.4"	41.6"	30.6"	0.0"	- 55.3"
TRAJ: 600 yd. zero	- 1.5"	31.3"	55.8"	69.3"	67.5"	46.1"	0.0"
VELOCITY (fps)	2300	1987	1707	1455	1245	1096	995
ENERGY (ft. lbs.)	1809	1351	996	724	531	411	339
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.6"	- 27.2"	- 63.5"	- 121.1"	- 204.6"
TRAJ: 200 yd. zero	- 1.5"	3.8"	0.0"	- 15.7"	- 48.2"	- 102.0"	- 181.7"
TRAJ: 300 yd. zero	- 1.5"	9.1"	10.5"	0.0"	- 27.1"	- 75.6"	- 150.1"
TRAJ: 400 yd. zero	- 1.5"	15.9"	24.1"	20.4"	0.0"	- 41.7"	- 109.3"
TRAJ: 500 yd. zero	- 1.5"	24.2"	40.8"	45.4"	33.4"	0.0"	- 59.3"
TRAJ: 600 yd. zero	- 1.5"	34.1"	60.6"	75.1"	72.9"	49.4"	0.0"

**7 MM (.284" Dia.) 162 GRAIN BOAT TAIL HOLLOW POINT MATCH**

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .580

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2825	2656	2493	2338	2189	2047
ENERGY (ft. lbs.)	3238	2872	2539	2237	1967	1724	1508
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.9"	- 10.9"	- 24.8"	- 45.0"	- 72.9"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.5"	- 19.0"	- 37.7"	- 64.2"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.4"	0.0"	- 10.2"	- 26.8"	- 51.1"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.5"	7.7"	0.0"	- 13.9"	- 35.6"
TRAJ: 500 yd. zero	- 1.5"	9.0"	15.1"	16.1"	11.2"	0.0"	- 18.9"
TRAJ: 600 yd. zero	- 1.5"	12.2"	21.4"	25.6"	23.8"	15.8"	0.0"
VELOCITY (fps)	2900	2728	2563	2404	2253	2108	1970
ENERGY (ft. lbs.)	3026	2679	2363	2080	1826	1599	1396
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.0"	- 27.1"	- 48.8"	- 78.7"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.0"	- 20.3"	- 40.3"	- 68.6"
TRAJ: 300 yd. zero	- 1.5"	4.0"	4.7"	0.0"	- 11.0"	- 28.7"	- 54.5"
TRAJ: 400 yd. zero	- 1.5"	6.8"	10.2"	8.3"	0.0"	- 14.9"	- 38.0"
TRAJ: 500 yd. zero	- 1.5"	9.8"	16.2"	17.2"	11.9"	0.0"	- 20.1"
TRAJ: 600 yd. zero	- 1.5"	13.1"	22.9"	27.3"	25.4"	16.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2632	2470	2316	2168	2027	1893
ENERGY (ft. lbs.)	2821	2492	2195	1929	1691	1478	1289
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.0"	-29.2"	-53.3"	-85.4"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.5"	-21.8"	-44.0"	-74.3"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.0"	0.0"	-11.7"	-31.4"	-59.3"
TRAJ: 400 yd. zero	-1.5"	7.3"	10.9"	8.8"	0.0"	-16.7"	-41.6"
TRAJ: 500 yd. zero	-1.5"	10.7"	17.6"	18.9"	13.4"	0.0"	-21.5"
TRAJ: 600 yd. zero	-1.5"	14.2"	24.8"	29.7"	27.7"	17.9"	0.0"
VELOCITY (fps)	2700	2535	2378	2228	2084	1947	1816
ENERGY (ft. lbs.)	2623	2313	2035	1785	1563	1364	1187
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-14.6"	-32.1"	-58.1"	-94.0"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.5"	-24.0"	-48.0"	-81.8"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.7"	0.0"	-12.6"	-33.7"	-64.8"
TRAJ: 400 yd. zero	-1.5"	8.0"	12.0"	9.5"	0.0"	-17.9"	-45.8"
TRAJ: 500 yd. zero	-1.5"	11.6"	19.2"	20.3"	14.4"	0.0"	-24.2"
TRAJ: 600 yd. zero	-1.5"	15.7"	27.3"	32.4"	30.6"	20.2"	0.0"
VELOCITY (fps)	2600	2440	2287	2140	2001	1868	1741
ENERGY (ft. lbs.)	2432	2142	1881	1648	1440	1255	1091
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-15.9"	-34.8"	-62.8"	-101.6"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.2"	-25.9"	-51.7"	-88.2"
TRAJ: 300 yd. zero	-1.5"	5.3"	6.2"	0.0"	-13.6"	-36.3"	-69.7"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.0"	10.2"	0.0"	-19.2"	-49.3"
TRAJ: 500 yd. zero	-1.5"	12.6"	20.7"	21.8"	15.4"	0.0"	-26.2"
TRAJ: 600 yd. zero	-1.5"	16.9"	29.4"	34.9"	32.9"	21.8"	0.0"
VELOCITY (fps)	2500	2344	2195	2053	1918	1788	1667
ENERGY (ft. lbs.)	2249	1977	1734	1517	1323	1151	1000
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-17.3"	-38.6"	-69.1"	-111.6"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-9.9"	-28.8"	-56.8"	-96.8"
TRAJ: 300 yd. zero	-1.5"	5.8"	6.7"	0.0"	-15.4"	-40.1"	-76.8"
TRAJ: 400 yd. zero	-1.5"	9.7"	14.4"	11.6"	0.0"	-20.8"	-53.6"
TRAJ: 500 yd. zero	-1.5"	13.8"	22.7"	24.1"	16.6"	0.0"	-28.6"
TRAJ: 600 yd. zero	-1.5"	18.6"	32.3"	38.4"	35.7"	23.9"	0.0"
VELOCITY (fps)	2400	2249	2104	1966	1835	1710	1595
ENERGY (ft. lbs.)	2072	1819	1593	1391	1211	1053	915
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.4"	-19.0"	-42.1"	-75.3"	-121.9"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-10.8"	-31.2"	-61.7"	-105.5"
TRAJ: 300 yd. zero	-1.5"	6.3"	7.2"	0.0"	-16.7"	-43.6"	-83.8"
TRAJ: 400 yd. zero	-1.5"	10.5"	15.8"	12.6"	0.0"	-22.6"	-58.6"
TRAJ: 500 yd. zero	-1.5"	15.1"	24.7"	26.2"	18.2"	0.0"	-31.4"
TRAJ: 600 yd. zero	-1.5"	20.3"	35.2"	41.9"	39.1"	26.2"	0.0"
VELOCITY (fps)	2300	2153	2013	1879	1752	1634	1513
ENERGY (ft. lbs.)	1903	1668	1458	1271	1105	960	824
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.4"	-21.4"	-46.9"	-83.7"	-134.1"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-11.8"	-34.1"	-67.7"	-114.8"
TRAJ: 300 yd. zero	-1.5"	7.2"	7.9"	0.0"	-18.3"	-47.9"	-91.1"
TRAJ: 400 yd. zero	-1.5"	11.7"	17.1"	13.7"	0.0"	-25.0"	-63.6"
TRAJ: 500 yd. zero	-1.5"	16.8"	27.1"	28.8"	20.1"	0.0"	-33.5"
TRAJ: 600 yd. zero	-1.5"	22.4"	38.3"	45.6"	42.4"	28.0"	0.0"

# 7 MM (.284" Dia.) 162 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .520

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2812	2631	2457	2291	2134	1984
ENERGY (ft. lbs.)	3238	2845	2490	2172	1889	1638	1417
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.1"	-25.4"	-46.3"	-74.7"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.5"	-19.3"	-38.7"	-65.6"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.4"	0.0"	-10.5"	-27.7"	-52.4"
TRAJ: 400 yd. zero	-1.5"	6.4"	9.7"	7.9"	0.0"	-14.5"	-36.6"
TRAJ: 500 yd. zero	-1.5"	9.3"	15.5"	16.7"	11.7"	0.0"	-19.1"
TRAJ: 600 yd. zero	-1.5"	12.5"	21.9"	26.2"	24.4"	15.9"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2716	2538	2369	2207	2054	1908
ENERGY (ft. lbs.)	3026	2653	2318	2019	1753	1518	1310
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.0"	-27.4"	-49.8"	-81.2"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.0"	-20.7"	-41.5"	-71.2"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.7"	0.0"	-11.3"	-29.7"	-57.1"
TRAJ: 400 yd. zero	-1.5"	6.9"	10.4"	8.5"	0.0"	-15.6"	-40.1"
TRAJ: 500 yd. zero	-1.5"	10.0"	16.6"	17.8"	12.5"	0.0"	-21.4"
TRAJ: 600 yd. zero	-1.5"	13.5"	23.8"	28.6"	26.8"	17.9"	0.0"
VELOCITY (fps)	2800	2619	2446	2281	2124	1975	1833
ENERGY (ft. lbs.)	2821	2468	2153	1872	1623	1403	1209
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.1"	-29.6"	-53.8"	-87.5"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.8"	-22.3"	-44.6"	-76.5"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.1"	0.0"	-12.1"	-31.9"	-61.2"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.2"	9.1"	0.0"	-16.7"	-43.0"
TRAJ: 500 yd. zero	-1.5"	10.8"	17.9"	19.2"	13.4"	0.0"	-22.9"
TRAJ: 600 yd. zero	-1.5"	14.6"	25.5"	30.6"	28.7"	19.1"	0.0"
VELOCITY (fps)	2700	2523	2354	2194	2041	1896	1759
ENERGY (ft. lbs.)	2823	2291	1995	1732	1499	1293	1113
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-14.7"	-32.7"	-58.8"	-96.5"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.6"	-24.6"	-49.6"	-84.3"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.8"	0.0"	-13.0"	-35.2"	-67.0"
TRAJ: 400 yd. zero	-1.5"	8.2"	12.3"	9.8"	0.0"	-18.8"	-47.4"
TRAJ: 500 yd. zero	-1.5"	12.0"	19.9"	21.1"	15.1"	0.0"	-24.7"
TRAJ: 600 yd. zero	-1.5"	16.1"	28.1"	33.5"	31.6"	20.6"	0.0"
VELOCITY (fps)	2600	2428	2264	2107	1959	1818	1686
ENERGY (ft. lbs.)	2432	2121	1844	1598	1381	1189	1023
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.1"	-35.6"	-64.8"	-104.8"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.3"	-26.6"	-53.6"	-91.3"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.3"	0.0"	-14.1"	-38.0"	-72.6"
TRAJ: 400 yd. zero	-1.5"	8.9"	13.3"	10.8"	0.0"	-20.3"	-51.4"
TRAJ: 500 yd. zero	-1.5"	13.0"	21.5"	22.8"	16.3"	0.0"	-26.9"
TRAJ: 600 yd. zero	-1.5"	17.5"	30.5"	36.3"	34.3"	22.5"	0.0"
VELOCITY (fps)	2500	2332	2173	2021	1877	1741	1614
ENERGY (ft. lbs.)	2249	1957	1699	1470	1268	1090	938
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-17.8"	-38.8"	-70.6"	-114.4"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-10.2"	-28.9"	-58.2"	-99.5"
TRAJ: 300 yd. zero	-1.5"	5.9"	6.8"	0.0"	-15.2"	-41.2"	-79.1"
TRAJ: 400 yd. zero	-1.5"	9.7"	14.5"	11.5"	0.0"	-22.1"	-56.1"
TRAJ: 500 yd. zero	-1.5"	14.1"	23.3"	24.8"	17.7"	0.0"	-29.6"
TRAJ: 600 yd. zero	-1.5"	19.1"	33.2"	39.6"	37.5"	24.7"	0.0"
VELOCITY (fps)	2400	2237	2082	1935	1795	1665	1544
ENERGY (ft. lbs.)	2072	1801	1560	1347	1160	997	858
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-19.3"	-42.4"	-77.4"	-125.5"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.1"	-31.4"	-63.7"	-109.0"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.4"	0.0"	-16.6"	-45.1"	-86.8"
TRAJ: 400 yd. zero	-1.5"	10.6"	15.7"	12.5"	0.0"	-24.3"	-61.8"
TRAJ: 500 yd. zero	-1.5"	15.5"	25.5"	27.1"	19.5"	0.0"	-32.6"
TRAJ: 600 yd. zero	-1.5"	20.9"	36.4"	43.4"	41.3"	27.2"	0.0"
VELOCITY (fps)	2300	2142	1992	1849	1715	1590	1485
ENERGY (ft. lbs.)	1903	1651	1428	1231	1058	910	772
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.4"	-21.9"	-47.5"	-84.9"	-137.0"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-12.2"	-34.5"	-68.7"	-117.6"
TRAJ: 300 yd. zero	-1.5"	7.3"	8.1"	0.0"	-18.2"	-48.4"	-93.1"
TRAJ: 400 yd. zero	-1.5"	11.9"	17.3"	13.7"	0.0"	-25.5"	-65.7"
TRAJ: 500 yd. zero	-1.5"	17.0"	27.5"	29.1"	20.5"	0.0"	-35.0"
TRAJ: 600 yd. zero	-1.5"	22.8"	39.2"	46.6"	43.8"	29.2"	0.0"



**7 MM (.284" Dia.) 175 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .310 BALLISTIC COEFFICIENT: .506

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2711	2528	2355	2190	2033	1885
ENERGY (ft. lbs.)	3269	2856	2485	2156	1864	1607	1381
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.2"	- 27.3"	- 50.2"	- 81.4"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.1"	- 20.6"	- 41.8"	- 71.3"
TRAJ: 300 yd. zero	- 1.5"	4.1"	4.8"	0.0"	- 11.0"	- 29.8"	- 56.9"
TRAJ: 400 yd. zero	- 1.5"	6.8"	10.3"	8.3"	0.0"	- 16.0"	- 40.4"
TRAJ: 500 yd. zero	- 1.5"	10.1"	16.7"	17.9"	12.8"	0.0"	- 21.1"
TRAJ: 600 yd. zero	- 1.5"	13.6"	23.8"	28.5"	26.9"	17.6"	0.0"
VELOCITY (fps)	2800	2614	2437	2268	2107	1955	1810
ENERGY (ft. lbs.)	3047	2656	2308	1999	1726	1485	1274
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.7"	- 13.3"	- 30.2"	- 55.0"	- 88.7"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 7.7"	- 22.7"	- 45.7"	- 77.6"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.2"	0.0"	- 12.4"	- 32.7"	- 62.0"
TRAJ: 400 yd. zero	- 1.5"	7.6"	11.4"	9.3"	0.0"	- 17.2"	- 43.4"
TRAJ: 500 yd. zero	- 1.5"	11.0"	18.3"	19.7"	13.8"	0.0"	- 22.7"
TRAJ: 600 yd. zero	- 1.5"	14.8"	25.9"	31.0"	28.9"	18.9"	0.0"
VELOCITY (fps)	2700	2518	2345	2181	2025	1877	1737
ENERGY (ft. lbs.)	2833	2465	2138	1849	1593	1369	1172
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.1"	- 14.5"	- 32.8"	- 59.5"	- 96.0"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 8.4"	- 24.6"	- 49.3"	- 83.7"
TRAJ: 300 yd. zero	- 1.5"	4.9"	5.6"	0.0"	- 13.3"	- 35.3"	- 66.8"
TRAJ: 400 yd. zero	- 1.5"	8.2"	12.3"	10.0"	0.0"	- 18.5"	- 46.8"
TRAJ: 500 yd. zero	- 1.5"	11.9"	19.7"	21.2"	14.8"	0.0"	- 24.5"
TRAJ: 600 yd. zero	- 1.5"	16.0"	27.9"	33.4"	31.2"	20.4"	0.0"
VELOCITY (fps)	2600	2423	2255	2095	1943	1799	1665
ENERGY (ft. lbs.)	2627	2282	1976	1706	1467	1258	1077
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.5"	- 15.9"	- 35.7"	- 64.6"	- 104.4"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 9.1"	- 26.6"	- 53.3"	- 90.7"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.1"	0.0"	- 14.4"	- 38.1"	- 72.5"
TRAJ: 400 yd. zero	- 1.5"	8.9"	13.3"	10.9"	0.0"	- 20.0"	- 50.8"
TRAJ: 500 yd. zero	- 1.5"	12.9"	21.3"	22.9"	16.0"	0.0"	- 26.7"
TRAJ: 600 yd. zero	- 1.5"	17.4"	30.3"	36.3"	33.9"	22.3"	0.0"
VELOCITY (fps)	2500	2328	2164	2009	1862	1723	1594
ENERGY (ft. lbs.)	2429	2106	1821	1569	1347	1154	988
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.0"	- 17.9"	- 39.6"	- 71.4"	- 115.1"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 10.4"	- 29.6"	- 58.8"	- 100.0"
TRAJ: 300 yd. zero	- 1.5"	6.0"	6.9"	0.0"	- 15.7"	- 41.4"	- 79.2"
TRAJ: 400 yd. zero	- 1.5"	9.9"	14.8"	11.8"	0.0"	- 21.8"	- 55.6"
TRAJ: 500 yd. zero	- 1.5"	14.3"	23.5"	24.9"	17.5"	0.0"	- 29.4"
TRAJ: 600 yd. zero	- 1.5"	19.2"	33.3"	39.6"	37.1"	24.5"	0.0"
VELOCITY (fps)	2400	2333	2074	1923	1781	1648	1525
ENERGY (ft. lbs.)	2239	1938	1672	1438	1232	1055	904
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.5"	- 19.7"	- 43.4"	- 78.4"	- 126.5"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 11.3"	- 32.2"	- 64.4"	- 109.7"
TRAJ: 300 yd. zero	- 1.5"	6.6"	7.6"	0.0"	- 17.1"	- 45.5"	- 87.0"
TRAJ: 400 yd. zero	- 1.5"	10.9"	16.1"	12.8"	0.0"	- 24.1"	- 61.3"
TRAJ: 500 yd. zero	- 1.5"	15.7"	25.8"	27.3"	19.3"	0.0"	- 32.4"
TRAJ: 600 yd. zero	- 1.5"	21.1"	36.6"	43.5"	40.9"	27.0"	0.0"
VELOCITY (fps)	2300	2138	1984	1838	1701	1574	1446
ENERGY (ft. lbs.)	2056	1776	1530	1313	1124	963	813
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.2"	- 21.8"	- 48.0"	- 86.7"	- 139.0"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 12.4"	- 35.5"	- 71.1"	- 120.3"
TRAJ: 300 yd. zero	- 1.5"	7.3"	8.3"	0.0"	- 18.9"	- 50.3"	- 95.3"
TRAJ: 400 yd. zero	- 1.5"	12.0"	17.8"	14.2"	0.0"	- 26.7"	- 66.9"
TRAJ: 500 yd. zero	- 1.5"	17.4"	28.5"	30.2"	21.4"	0.0"	- 34.9"
TRAJ: 600 yd. zero	- 1.5"	23.2"	40.1"	47.7"	44.7"	29.1"	0.0"
VELOCITY (fps)	2200	2043	1894	1753	1622	1491	1370
ENERGY (ft. lbs.)	1881	1622	1394	1194	1022	864	730
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.9"	- 24.2"	- 53.4"	- 95.8"	- 154.4"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 13.7"	- 39.5"	- 78.3"	- 133.4"
TRAJ: 300 yd. zero	- 1.5"	8.1"	9.2"	0.0"	- 21.1"	- 55.3"	- 105.9"
TRAJ: 400 yd. zero	- 1.5"	13.4"	19.8"	15.9"	0.0"	- 28.9"	- 74.1"
TRAJ: 500 yd. zero	- 1.5"	19.2"	31.4"	33.2"	23.2"	0.0"	- 39.4"
TRAJ: 600 yd. zero	- 1.5"	25.7"	44.5"	53.0"	49.5"	32.9"	0.0"



**7 MM (.284" Dia.) 175 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .310 BALLISTIC COEFFICIENT: .260

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2538	2207	1908	1641	1402	1208
ENERGY (ft. lbs.)	3269	2504	1894	1415	1047	764	567
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.0"	- 15.3"	- 36.4"	- 70.3"	- 122.0"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 9.2"	- 28.3"	- 60.2"	- 109.8"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.2"	0.0"	- 16.0"	- 44.8"	- 91.3"
TRAJ: 400 yd. zero	- 1.5"	9.1"	14.2"	12.0"	0.0"	- 24.7"	- 67.2"
TRAJ: 500 yd. zero	- 1.5"	14.1"	24.1"	26.9"	19.8"	0.0"	- 37.5"
TRAJ: 600 yd. zero	- 1.5"	20.3"	36.6"	45.7"	44.9"	31.3"	0.0"
VELOCITY (fps)	2800	2446	2124	1833	1576	1346	1169
ENERGY (ft. lbs.)	3047	2325	1753	1306	966	705	531
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.4"	- 16.8"	- 39.9"	- 76.7"	- 132.1"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 10.2"	- 30.9"	- 65.5"	- 118.7"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.8"	0.0"	- 17.3"	- 48.5"	- 98.3"
TRAJ: 400 yd. zero	- 1.5"	10.0"	15.5"	13.0"	0.0"	- 26.8"	- 72.2"
TRAJ: 500 yd. zero	- 1.5"	15.3"	26.2"	29.1"	21.5"	0.0"	- 40.0"
TRAJ: 600 yd. zero	- 1.5"	22.0"	39.6"	49.2"	48.2"	33.4"	0.0"
VELOCITY (fps)	2700	2354	2041	1759	1502	1286	1129
ENERGY (ft. lbs.)	2833	2155	1619	1202	877	643	495
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 18.3"	- 43.1"	- 83.4"	- 143.6"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 11.0"	- 33.3"	- 71.2"	- 128.9"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.3"	0.0"	- 18.6"	- 52.8"	- 106.8"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.7"	14.0"	0.0"	- 29.5"	- 78.8"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.5"	31.7"	23.6"	0.0"	- 43.4"
TRAJ: 600 yd. zero	- 1.5"	23.9"	43.0"	53.4"	52.6"	36.2"	0.0"
VELOCITY (fps)	2600	2264	1959	1686	1440	1237	1092
ENERGY (ft. lbs.)	2627	1992	1492	1105	806	595	464
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.3"	- 20.0"	- 47.1"	- 91.1"	- 156.1"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 11.9"	- 36.3"	- 77.7"	- 140.0"
TRAJ: 300 yd. zero	- 1.5"	6.7"	8.0"	0.0"	- 20.3"	- 57.7"	- 116.1"
TRAJ: 400 yd. zero	- 1.5"	11.8"	18.2"	15.3"	0.0"	- 32.2"	- 85.5"
TRAJ: 500 yd. zero	- 1.5"	18.2"	31.1"	34.7"	25.8"	0.0"	- 46.7"
TRAJ: 600 yd. zero	- 1.5"	26.0"	46.7"	58.1"	57.0"	39.0"	0.0"
VELOCITY (fps)	2500	2173	1877	1614	1379	1192	1063
ENERGY (ft. lbs.)	2429	1835	1370	1013	739	552	439
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.1"	- 22.3"	- 52.0"	- 99.7"	- 170.8"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 13.1"	- 39.8"	- 84.4"	- 152.2"
TRAJ: 300 yd. zero	- 1.5"	7.4"	8.8"	0.0"	- 22.3"	- 62.5"	- 126.0"
TRAJ: 400 yd. zero	- 1.5"	13.0"	19.9"	16.7"	0.0"	- 34.6"	- 92.5"
TRAJ: 500 yd. zero	- 1.5"	19.9"	33.8"	37.5"	27.7"	0.0"	- 50.9"
TRAJ: 600 yd. zero	- 1.5"	28.4"	50.8"	63.0"	61.7"	42.4"	0.0"
VELOCITY (fps)	2400	2082	1796	1544	1320	1151	1035
ENERGY (ft. lbs.)	2239	1685	1253	927	677	515	417
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.7"	- 24.6"	- 57.1"	- 109.4"	- 185.5"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 14.5"	- 43.6"	- 92.5"	- 165.2"
TRAJ: 300 yd. zero	- 1.5"	8.2"	9.7"	0.0"	- 24.2"	- 68.3"	- 136.2"
TRAJ: 400 yd. zero	- 1.5"	14.3"	21.8"	18.2"	0.0"	- 38.0"	- 99.8"
TRAJ: 500 yd. zero	- 1.5"	21.9"	37.0"	41.0"	30.4"	0.0"	- 54.2"
TRAJ: 600 yd. zero	- 1.5"	30.9"	55.1"	68.1"	66.6"	45.2"	0.0"
VELOCITY (fps)	2300	1992	1715	1465	1256	1104	1003
ENERGY (ft. lbs.)	2056	1542	1143	834	613	474	391
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.5"	- 27.1"	- 63.2"	- 120.3"	- 203.1"
TRAJ: 200 yd. zero	- 1.5"	3.8"	0.0"	- 15.8"	- 48.1"	- 101.5"	- 180.5"
TRAJ: 300 yd. zero	- 1.5"	9.1"	10.6"	0.0"	- 26.9"	- 75.0"	- 148.7"
TRAJ: 400 yd. zero	- 1.5"	15.8"	24.1"	20.2"	0.0"	- 41.3"	- 108.3"
TRAJ: 500 yd. zero	- 1.5"	24.1"	40.6"	45.0"	33.1"	0.0"	- 58.6"
TRAJ: 600 yd. zero	- 1.5"	33.9"	60.2"	74.4"	72.2"	48.9"	0.0"
VELOCITY (fps)	2200	1902	1636	1397	1205	1071	978
ENERGY (ft. lbs.)	1881	1406	1040	758	564	446	372
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.4"	- 30.1"	- 69.4"	- 131.4"	- 220.8"
TRAJ: 200 yd. zero	- 1.5"	4.2"	0.0"	- 17.4"	- 52.5"	- 110.2"	- 195.3"
TRAJ: 300 yd. zero	- 1.5"	10.0"	11.6"	0.0"	- 29.2"	- 81.2"	- 160.5"
TRAJ: 400 yd. zero	- 1.5"	17.4"	26.3"	22.0"	0.0"	- 44.6"	- 116.6"
TRAJ: 500 yd. zero	- 1.5"	26.3"	44.1"	48.7"	35.7"	0.0"	- 83.0"
TRAJ: 600 yd. zero	- 1.5"	36.8"	65.1"	80.3"	77.8"	52.6"	0.0"

30 CALIBER (.308" Dia.) 100 GRAIN SHORT JACKET  
SECTIONAL DENSITY: .151 BALLISTIC COEFFICIENT: .132

## BALLISTICS TABLES

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2700	2359	2050	1771	1526	1308	1145
ENERGY (ft. lbs.)	1619	1236	934	696	517	380	291
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 2.2"	- 7.2"	- 16.0"	- 29.8"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 2.1"	- 7.0"	- 15.8"	- 29.5"
TRAJ: 150 yd. zero	- 1.5"	.8"	1.4"	0.0"	- 4.2"	- 12.2"	- 25.2"
TRAJ: 200 yd. zero	- 1.5"	1.8"	3.5"	3.2"	0.0"	- 6.9"	- 18.9"
TRAJ: 250 yd. zero	- 1.5"	3.2"	6.3"	7.3"	5.6"	0.0"	- 10.6"
TRAJ: 300 yd. zero	- 1.5"	5.0"	9.9"	12.6"	12.6"	8.8"	0.0"
VELOCITY (fps)	2600	2268	1968	1698	1453	1250	1102
ENERGY (ft. lbs.)	1501	1143	860	640	469	347	270
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 2"	- 2.8"	- 8.4"	- 18.1"	- 33.2"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.4"	- 7.9"	- 17.5"	- 32.4"
TRAJ: 150 yd. zero	- 1.5"	.9"	1.6"	0.0"	- 4.6"	- 13.4"	- 27.5"
TRAJ: 200 yd. zero	- 1.5"	2.1"	4.0"	3.5"	0.0"	- 7.6"	- 20.6"
TRAJ: 250 yd. zero	- 1.5"	3.6"	7.0"	8.1"	6.1"	0.0"	- 11.4"
TRAJ: 300 yd. zero	- 1.5"	5.5"	10.8"	13.8"	13.7"	9.5"	0.0"
VELOCITY (fps)	2500	2178	1886	1625	1391	1203	1072
ENERGY (ft. lbs.)	1388	1053	790	587	430	321	255
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 3"	- 3.3"	- 9.5"	- 20.2"	- 36.6"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.7"	- 8.7"	- 19.3"	- 35.5"
TRAJ: 150 yd. zero	- 1.5"	1.1"	1.8"	0.0"	- 5.1"	- 14.7"	- 30.0"
TRAJ: 200 yd. zero	- 1.5"	2.4"	4.4"	3.8"	0.0"	- 8.3"	- 22.3"
TRAJ: 250 yd. zero	- 1.5"	4.1"	7.7"	8.8"	6.7"	0.0"	- 12.3"
TRAJ: 300 yd. zero	- 1.5"	6.1"	11.8"	15.0"	14.9"	10.3"	0.0"
VELOCITY (fps)	2400	2087	1804	1555	1331	1161	1043
ENERGY (ft. lbs.)	1279	967	723	537	394	299	242
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .5"	- 3.7"	- 10.7"	- 22.5"	- 40.1"
TRAJ: 100 yd. zero	- 1.5"	.3"	0.0"	- 2.9"	- 9.6"	- 21.2"	- 38.4"
TRAJ: 150 yd. zero	- 1.5"	1.3"	2.0"	0.0"	- 5.6"	- 16.2"	- 32.5"
TRAJ: 200 yd. zero	- 1.5"	2.7"	4.8"	4.3"	0.0"	- 9.1"	- 24.0"
TRAJ: 250 yd. zero	- 1.5"	4.5"	8.5"	9.7"	7.3"	0.0"	- 13.0"
TRAJ: 300 yd. zero	- 1.5"	6.7"	12.8"	16.3"	16.0"	10.9"	0.0"
VELOCITY (fps)	2300	1996	1723	1475	1267	1113	1010
ENERGY (ft. lbs.)	1175	885	659	483	356	275	226
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .7"	- 4.4"	- 12.2"	- 25.3"	- 44.6"
TRAJ: 100 yd. zero	- 1.5"	.4"	0.0"	- 3.3"	- 10.8"	- 23.4"	- 42.4"
TRAJ: 150 yd. zero	- 1.5"	1.5"	2.2"	0.0"	- 6.3"	- 17.8"	- 35.7"
TRAJ: 200 yd. zero	- 1.5"	3.1"	5.4"	4.7"	0.0"	- 9.9"	- 26.2"
TRAJ: 250 yd. zero	- 1.5"	5.1"	9.4"	10.7"	8.0"	0.0"	- 14.2"
TRAJ: 300 yd. zero	- 1.5"	7.4"	14.2"	17.9"	17.5"	11.9"	0.0"
VELOCITY (fps)	2200	1906	1643	1407	1214	1079	985
ENERGY (ft. lbs.)	1075	807	600	439	327	259	215
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .9"	- 5.1"	- 13.9"	- 28.2"	- 49.4"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.7"	- 12.0"	- 25.8"	- 46.5"
TRAJ: 150 yd. zero	- 1.5"	1.7"	2.5"	0.0"	- 7.0"	- 19.6"	- 39.0"
TRAJ: 200 yd. zero	- 1.5"	3.5"	6.0"	5.3"	0.0"	- 10.8"	- 28.5"
TRAJ: 250 yd. zero	- 1.5"	5.7"	10.4"	11.8"	8.7"	0.0"	- 15.4"
TRAJ: 300 yd. zero	- 1.5"	8.2"	15.5"	19.5"	19.0"	12.9"	0.0"
VELOCITY (fps)	2100	1816	1565	1340	1167	1047	961
ENERGY (ft. lbs.)	979	732	544	399	302	244	205
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.2"	- 6.0"	- 15.7"	- 31.4"	- 54.0"
TRAJ: 100 yd. zero	- 1.5"	.8"	0.0"	- 4.1"	- 13.2"	- 28.3"	- 50.3"
TRAJ: 150 yd. zero	- 1.5"	2.0"	2.8"	0.0"	- 7.7"	- 21.3"	- 41.9"
TRAJ: 200 yd. zero	- 1.5"	3.9"	6.6"	5.8"	0.0"	- 11.7"	- 30.3"
TRAJ: 250 yd. zero	- 1.5"	6.3"	11.3"	12.8"	9.4"	0.0"	- 16.2"
TRAJ: 300 yd. zero	- 1.5"	9.0"	16.8"	21.0"	20.3"	13.6"	0.0"
VELOCITY (fps)	2000	1726	1478	1269	1114	1011	932
ENERGY (ft. lbs.)	888	662	485	358	276	227	193
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.4"	- 7.0"	- 17.7"	- 34.9"	- 59.4"
TRAJ: 100 yd. zero	- 1.5"	.7"	0.0"	- 4.7"	- 14.8"	- 31.2"	- 54.9"
TRAJ: 150 yd. zero	- 1.5"	2.3"	3.2"	0.0"	- 8.4"	- 23.2"	- 45.4"
TRAJ: 200 yd. zero	- 1.5"	4.4"	7.4"	6.3"	0.0"	- 12.7"	- 32.7"
TRAJ: 250 yd. zero	- 1.5"	7.0"	12.5"	14.0"	10.2"	0.0"	- 17.4"
TRAJ: 300 yd. zero	- 1.5"	9.9"	18.3"	22.7"	21.8"	14.6"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1900	1638	1402	1211	1077	983	906
ENERGY (ft. lbs.)	802	596	437	326	258	215	182
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.8"	-8.1"	-20.2"	-39.0"	-65.8"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-5.3"	-16.5"	-34.5"	-60.3"
TRAJ: 150 yd. zero	-1.5"	2.7"	3.6"	0.0"	-9.3"	-25.5"	-49.5"
TRAJ: 200 yd. zero	-1.5"	5.1"	8.3"	7.0"	0.0"	-13.8"	-35.4"
TRAJ: 250 yd. zero	-1.5"	7.8"	13.8"	15.3"	11.1"	0.0"	-18.9"
TRAJ: 300 yd. zero	-1.5"	11.0"	20.1"	24.8"	23.7"	15.8"	0.0"
VELOCITY (fps)	1800	1551	1329	1159	1042	957	884
ENERGY (ft. lbs.)	720	535	392	298	241	204	173
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.2"	-9.3"	-22.7"	-43.2"	-72.2"
TRAJ: 100 yd. zero	-1.5"	1.1"	0.0"	-6.0"	-18.2"	-37.6"	-65.5"
TRAJ: 150 yd. zero	-1.5"	3.1"	4.0"	0.0"	-10.2"	-27.6"	-53.5"
TRAJ: 200 yd. zero	-1.5"	5.7"	9.1"	7.7"	0.0"	-14.8"	-38.2"
TRAJ: 250 yd. zero	-1.5"	8.7"	15.1"	16.6"	11.9"	0.0"	-20.3"
TRAJ: 300 yd. zero	-1.5"	12.0"	21.9"	26.8"	25.5"	17.0"	0.0"
VELOCITY (fps)	1700	1455	1251	1103	1003	925	855
ENERGY (ft. lbs.)	642	470	348	270	223	190	162
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.6"	-10.8"	-25.8"	-48.4"	-80.2"
TRAJ: 100 yd. zero	-1.5"	1.3"	0.0"	-6.8"	-20.4"	-41.7"	-72.1"
TRAJ: 150 yd. zero	-1.5"	3.6"	4.5"	0.0"	-11.3"	-30.3"	-58.5"
TRAJ: 200 yd. zero	-1.5"	6.5"	10.2"	8.5"	0.0"	-16.1"	-41.5"
TRAJ: 250 yd. zero	-1.5"	9.7"	16.7"	18.2"	12.9"	0.0"	-22.1"
TRAJ: 300 yd. zero	-1.5"	13.4"	24.1"	29.3"	27.7"	18.4"	0.0"

### 30 CALIBER (.308" Dia.) 110. GRAIN ROUND NOSE & FMJ

SECTIONAL DENSITY: .166 BALLISTIC COEFFICIENT: .151

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2700	2401	2125	1873	1645	1435	1256
ENERGY (ft. lbs.)	1781	1408	1103	857	661	503	386
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-2.0"	-6.6"	-14.4"	-26.5"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.9"	-6.5"	-14.3"	-26.3"
TRAJ: 150 yd. zero	-1.5"	.7"	1.3"	0.0"	-3.8"	-10.9"	-22.3"
TRAJ: 200 yd. zero	-1.5"	1.7"	3.3"	2.9"	0.0"	-6.1"	-16.6"
TRAJ: 250 yd. zero	-1.5"	2.9"	5.7"	6.8"	4.9"	0.0"	-9.1"
TRAJ: 300 yd. zero	-1.5"	4.4"	8.8"	11.2"	11.1"	7.7"	0.0"
VELOCITY (fps)	2600	2308	2041	1796	1577	1375	1210
ENERGY (ft. lbs.)	1652	1302	1017	788	607	462	357
TRAJ: 50 yd. zero	-1.5"	0.0"	-.1"	-2.5"	-7.5"	-16.1"	-29.3"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.2"	-7.2"	-15.7"	-28.8"
TRAJ: 150 yd. zero	-1.5"	.8"	1.5"	0.0"	-4.2"	-11.9"	-24.3"
TRAJ: 200 yd. zero	-1.5"	1.9"	3.6"	3.2"	0.0"	-6.6"	-18.0"
TRAJ: 250 yd. zero	-1.5"	3.2"	6.3"	7.2"	5.3"	0.0"	-10.0"
TRAJ: 300 yd. zero	-1.5"	4.9"	9.6"	12.2"	12.0"	8.4"	0.0"
VELOCITY (fps)	2500	2216	1956	1719	1500	1310	1162
ENERGY (ft. lbs.)	1527	1200	935	722	550	419	330
TRAJ: 50 yd. zero	-1.5"	0.0"	-.3"	-3.0"	-8.6"	-18.2"	-32.9"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.4"	-7.9"	-17.3"	-31.8"
TRAJ: 150 yd. zero	-1.5"	1.0"	1.7"	0.0"	-4.5"	-13.2"	-26.9"
TRAJ: 200 yd. zero	-1.5"	2.2"	4.0"	3.4"	0.0"	-7.4"	-20.0"
TRAJ: 250 yd. zero	-1.5"	3.6"	6.9"	7.9"	6.0"	0.0"	-11.0"
TRAJ: 300 yd. zero	-1.5"	5.5"	10.8"	13.5"	13.3"	9.2"	0.0"
VELOCITY (fps)	2400	2125	1872	1644	1434	1256	1125
ENERGY (ft. lbs.)	1407	1103	856	661	503	385	309
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.4"	-9.8"	-20.4"	-36.3"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.7"	-8.8"	-19.2"	-34.9"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.8"	0.0"	-5.1"	-14.5"	-29.3"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.4"	3.9"	0.0"	-8.1"	-21.6"
TRAJ: 250 yd. zero	-1.5"	4.1"	7.7"	8.8"	6.5"	0.0"	-11.8"
TRAJ: 300 yd. zero	-1.5"	6.1"	11.8"	14.7"	14.4"	9.9"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2300	2033	1788	1570	1370	1206	1088
ENERGY (ft. lbs.)	1292	1010	781	603	458	355	288
TRAJ: 50 yd. zero	-1.5"	0.0"	-.8"	-4.0"	-11.0"	-22.7"	-40.1"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-3.1"	-9.8"	-21.1"	-38.1"
TRAJ: 150 yd. zero	-1.5"	1.4"	2.1"	0.0"	-5.6"	-15.9"	-31.9"
TRAJ: 200 yd. zero	-1.5"	2.8"	4.9"	4.2"	0.0"	-8.8"	-23.4"
TRAJ: 250 yd. zero	-1.5"	4.5"	8.4"	9.6"	7.1"	0.0"	-12.8"
TRAJ: 300 yd. zero	-1.5"	6.7"	12.7"	18.0"	15.7"	10.7"	0.0"
VELOCITY (fps)	2200	1941	1706	1488	1300	1155	1050
ENERGY (ft. lbs.)	1182	921	711	541	413	326	269
TRAJ: 50 yd. zero	-1.5"	0.0"	-.9"	-4.8"	-12.8"	-25.7"	-44.6"
TRAJ: 100 yd. zero	-1.5"	.5"	0.0"	-3.4"	-11.0"	-23.4"	-41.9"
TRAJ: 150 yd. zero	-1.5"	1.6"	2.3"	0.0"	-6.3"	-17.6"	-34.9"
TRAJ: 200 yd. zero	-1.5"	3.2"	5.5"	4.8"	0.0"	-9.7"	-25.4"
TRAJ: 250 yd. zero	-1.5"	5.1"	9.4"	10.6"	7.8"	0.0"	-13.7"
TRAJ: 300 yd. zero	-1.5"	7.4"	14.0"	17.5"	16.9"	11.5"	0.0"
VELOCITY (fps)	2100	1850	1624	1417	1242	1110	1017
ENERGY (ft. lbs.)	1077	836	645	490	377	301	253
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.1"	-5.6"	-14.5"	-28.8"	-49.7"
TRAJ: 100 yd. zero	-1.5"	.6"	0.0"	-3.9"	-12.2"	-25.9"	-46.2"
TRAJ: 150 yd. zero	-1.5"	1.9"	2.6"	0.0"	-6.9"	-19.3"	-38.3"
TRAJ: 200 yd. zero	-1.5"	3.6"	6.1"	5.2"	0.0"	-10.7"	-27.9"
TRAJ: 250 yd. zero	-1.5"	5.8"	10.4"	11.6"	8.6"	0.0"	-15.1"
TRAJ: 300 yd. zero	-1.5"	8.3"	15.4"	19.2"	18.6"	12.6"	0.0"
VELOCITY (fps)	2000	1759	1544	1347	1189	1074	990
ENERGY (ft. lbs.)	977	756	583	443	345	282	239
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.3"	-6.4"	-16.3"	-32.0"	-54.7"
TRAJ: 100 yd. zero	-1.5"	.7"	0.0"	-4.3"	-13.6"	-28.6"	-50.7"
TRAJ: 150 yd. zero	-1.5"	2.1"	2.9"	0.0"	-7.8"	-21.3"	-41.9"
TRAJ: 200 yd. zero	-1.5"	4.1"	6.8"	5.9"	0.0"	-11.5"	-30.2"
TRAJ: 250 yd. zero	-1.5"	6.4"	11.5"	12.8"	9.3"	0.0"	-16.3"
TRAJ: 300 yd. zero	-1.5"	9.1"	16.9"	21.0"	20.2"	13.6"	0.0"
VELOCITY (fps)	1900	1669	1456	1273	1137	1037	961
ENERGY (ft. lbs.)	882	680	518	396	316	263	226
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.7"	-7.5"	-18.6"	-36.0"	-60.7"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-4.9"	-15.2"	-31.8"	-55.6"
TRAJ: 150 yd. zero	-1.5"	2.5"	3.3"	0.0"	-8.6"	-23.5"	-45.7"
TRAJ: 200 yd. zero	-1.5"	4.7"	7.6"	6.5"	0.0"	-12.7"	-32.7"
TRAJ: 250 yd. zero	-1.5"	7.2"	12.7"	14.1"	10.2"	0.0"	-17.4"
TRAJ: 300 yd. zero	-1.5"	10.1"	18.6"	22.9"	21.8"	14.6"	0.0"
VELOCITY (fps)	1800	1581	1379	1212	1090	1002	932
ENERGY (ft. lbs.)	792	610	464	359	290	245	212
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.0"	-8.7"	-21.1"	-40.5"	-67.9"
TRAJ: 100 yd. zero	-1.5"	1.0"	0.0"	-5.6"	-17.0"	-35.4"	-61.8"
TRAJ: 150 yd. zero	-1.5"	2.9"	3.8"	0.0"	-9.5"	-25.9"	-50.4"
TRAJ: 200 yd. zero	-1.5"	5.3"	8.5"	7.1"	0.0"	-14.0"	-36.2"
TRAJ: 250 yd. zero	-1.5"	8.1"	14.2"	15.6"	11.3"	0.0"	-19.3"
TRAJ: 300 yd. zero	-1.5"	11.3"	20.6"	25.2"	24.1"	16.1"	0.0"
VELOCITY (fps)	1700	1483	1296	1152	1048	970	901
ENERGY (ft. lbs.)	706	537	410	324	268	230	198
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.4"	-10.2"	-24.3"	-45.7"	-75.3"
TRAJ: 100 yd. zero	-1.5"	1.2"	0.0"	-6.5"	-19.3"	-39.5"	-67.8"
TRAJ: 150 yd. zero	-1.5"	3.4"	4.3"	0.0"	-10.6"	-28.6"	-54.8"
TRAJ: 200 yd. zero	-1.5"	6.1"	9.7"	8.0"	0.0"	-15.3"	-38.8"
TRAJ: 250 yd. zero	-1.5"	9.2"	15.8"	17.2"	12.3"	0.0"	-20.4"
TRAJ: 300 yd. zero	-1.5"	12.6"	22.6"	27.4"	25.9"	17.0"	0.0"

**30 CALIBER (.308" Dia.) 110 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .166 BALLISTIC COEFFICIENT: .249

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3900	3453	3036	2649	2293	1973	1687
ENERGY (ft. lbs.)	3716	2913	2252	1714	1285	951	695
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.4"	-6.7"	-17.2"	-34.5"	-60.9"
TRAJ: 200 yd. zero	-1.5"	.7"	0.0"	-4.5"	-14.3"	-30.8"	-56.5"
TRAJ: 300 yd. zero	-1.5"	2.3"	3.1"	0.0"	-8.2"	-23.2"	-47.3"
TRAJ: 400 yd. zero	-1.5"	4.3"	7.2"	6.2"	0.0"	-12.9"	-35.0"
TRAJ: 500 yd. zero	-1.5"	6.9"	12.3"	13.9"	10.4"	0.0"	-19.5"
TRAJ: 600 yd. zero	-1.5"	10.2"	18.8"	23.7"	23.4"	16.3"	0.0"
VELOCITY (fps)	3800	3360	2949	2568	2221	1908	1630
ENERGY (ft. lbs.)	3528	2758	2125	1611	1205	889	649
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.6"	-7.4"	-18.5"	-36.8"	-64.8"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.9"	-15.2"	-32.7"	-59.8"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.3"	0.0"	-8.6"	-24.4"	-50.0"
TRAJ: 400 yd. zero	-1.5"	4.6"	7.6"	6.5"	0.0"	-13.6"	-37.0"
TRAJ: 500 yd. zero	-1.5"	7.4"	13.1"	14.7"	10.9"	0.0"	-20.6"
TRAJ: 600 yd. zero	-1.5"	10.8"	20.0"	25.0"	24.7"	17.2"	0.0"
VELOCITY (fps)	3700	3266	2862	2488	2148	1843	1574
ENERGY (ft. lbs.)	3345	2607	2002	1512	1128	830	605
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-7.9"	-19.6"	-39.3"	-69.1"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.2"	-16.0"	-34.8"	-63.7"
TRAJ: 300 yd. zero	-1.5"	2.6"	3.5"	0.0"	-9.1"	-26.1"	-53.2"
TRAJ: 400 yd. zero	-1.5"	4.9"	8.0"	6.9"	0.0"	-14.7"	-39.5"
TRAJ: 500 yd. zero	-1.5"	7.9"	13.9"	15.7"	11.8"	0.0"	-21.9"
TRAJ: 600 yd. zero	-1.5"	11.5"	21.2"	26.6"	26.4"	18.3"	0.0"
VELOCITY (fps)	3600	3173	2776	2409	2077	1779	1509
ENERGY (ft. lbs.)	3166	2460	1882	1418	1054	773	557
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.6"	-21.4"	-42.4"	-74.2"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.6"	-17.4"	-37.3"	-68.1"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-9.9"	-27.9"	-56.9"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.7"	7.4"	0.0"	-15.5"	-42.0"
TRAJ: 500 yd. zero	-1.5"	8.5"	14.9"	16.8"	12.5"	0.0"	-23.3"
TRAJ: 600 yd. zero	-1.5"	12.4"	22.7"	28.5"	28.0"	19.5"	0.0"
VELOCITY (fps)	3500	3080	2689	2330	2006	1716	1456
ENERGY (ft. lbs.)	2993	2317	1767	1326	983	719	518
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-9.3"	-23.0"	-45.7"	-79.8"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.9"	-18.4"	-40.0"	-73.0"
TRAJ: 300 yd. zero	-1.5"	3.1"	4.0"	0.0"	-10.4"	-30.0"	-61.0"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.2"	7.9"	0.0"	-16.9"	-45.3"
TRAJ: 500 yd. zero	-1.5"	9.1"	16.0"	18.0"	13.6"	0.0"	-24.9"
TRAJ: 600 yd. zero	-1.5"	13.3"	24.3"	30.5"	30.2"	20.8"	0.0"
VELOCITY (fps)	3400	2987	2603	2252	1936	1654	1404
ENERGY (ft. lbs.)	2824	2179	1655	1239	916	669	481
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-10.2"	-25.0"	-49.3"	-86.3"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.5"	-20.1"	-43.2"	-78.9"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.4"	0.0"	-11.4"	-32.3"	-65.8"
TRAJ: 400 yd. zero	-1.5"	6.3"	10.1"	8.8"	0.0"	-18.0"	-48.7"
TRAJ: 500 yd. zero	-1.5"	9.9"	17.3"	19.4"	14.5"	0.0"	-27.0"
TRAJ: 600 yd. zero	-1.5"	14.4"	26.3"	32.9"	32.5"	22.6"	0.0"
VELOCITY (fps)	3300	2894	2517	2174	1866	1594	1353
ENERGY (ft. lbs.)	2661	2046	1548	1155	851	621	447
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-11.1"	-26.9"	-53.0"	-92.6"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.9"	-21.4"	-46.1"	-84.3"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.7"	0.0"	-12.1"	-34.5"	-70.3"
TRAJ: 400 yd. zero	-1.5"	6.7"	10.7"	9.1"	0.0"	-19.3"	-52.2"
TRAJ: 500 yd. zero	-1.5"	10.6"	18.5"	20.7"	15.5"	0.0"	-28.9"
TRAJ: 600 yd. zero	-1.5"	15.4"	28.1"	35.2"	34.8"	24.2"	0.0"
VELOCITY (fps)	3200	2801	2432	2098	1797	1535	1304
ENERGY (ft. lbs.)	2502	1916	1445	1075	789	576	416
TRAJ: 100 yd. zero	-1.5"	0.0"	3.0"	-11.9"	-29.1"	-57.3"	-100.1"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.4"	-23.1"	-49.7"	-91.1"
TRAJ: 300 yd. zero	-1.5"	4.0"	5.0"	0.0"	-13.2"	-37.3"	-76.1"
TRAJ: 400 yd. zero	-1.5"	7.3"	11.6"	9.9"	0.0"	-20.8"	-56.3"
TRAJ: 500 yd. zero	-1.5"	11.5"	19.9"	22.4"	16.8"	0.0"	-31.3"
TRAJ: 600 yd. zero	-1.5"	16.7"	30.4"	38.1"	37.5"	26.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2708	2347	2021	1729	1467	1251
ENERGY (ft. lbs.)	2348	1791	1346	998	731	526	382
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-13.2"	-31.8"	-62.0"	-108.2"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-8.2"	-25.1"	-53.5"	-98.0"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.5"	0.0"	-14.1"	-39.8"	-81.6"
TRAJ: 400 yd. zero	-1.5"	8.0"	12.6"	10.6"	0.0"	-22.1"	-60.3"
TRAJ: 500 yd. zero	-1.5"	12.4"	21.4"	23.9"	17.7"	0.0"	-33.8"
TRAJ: 600 yd. zero	-1.5"	18.0"	32.7"	40.8"	40.3"	28.2"	0.0"
VELOCITY (fps)	3000	2615	2263	1946	1663	1411	1208
ENERGY (ft. lbs.)	2199	1671	1251	925	676	486	357
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-14.3"	-34.4"	-66.8"	-117.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.8"	-26.9"	-57.6"	-105.9"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.9"	0.0"	-15.2"	-42.9"	-88.3"
TRAJ: 400 yd. zero	-1.5"	8.6"	13.5"	11.4"	0.0"	-23.8"	-65.4"
TRAJ: 500 yd. zero	-1.5"	13.4"	23.0"	25.8"	19.1"	0.0"	-36.8"
TRAJ: 600 yd. zero	-1.5"	19.5"	35.3"	44.2"	43.6"	30.7"	0.0"
VELOCITY (fps)	2900	2523	2180	1871	1598	1356	1170
ENERGY (ft. lbs.)	2055	1555	1161	855	624	449	334
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-15.5"	-37.2"	-72.4"	-126.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.4"	-29.1"	-62.2"	-114.0"
TRAJ: 300 yd. zero	-1.5"	5.2"	6.3"	0.0"	-16.4"	-46.4"	-95.0"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.6"	12.4"	0.0"	-25.8"	-70.3"
TRAJ: 500 yd. zero	-1.5"	14.5"	24.9"	27.9"	20.7"	0.0"	-39.3"
TRAJ: 600 yd. zero	-1.5"	21.0"	38.0"	47.5"	46.9"	32.8"	0.0"
VELOCITY (fps)	2800	2431	2097	1797	1535	1304	1135
ENERGY (ft. lbs.)	1915	1444	1074	789	575	415	315
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-17.1"	-40.8"	-79.4"	-137.6"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.4"	-31.9"	-68.2"	-124.2"
TRAJ: 300 yd. zero	-1.5"	5.7"	7.0"	0.0"	-17.9"	-50.7"	-103.3"
TRAJ: 400 yd. zero	-1.5"	10.2"	16.0"	13.5"	0.0"	-28.3"	-76.3"
TRAJ: 500 yd. zero	-1.5"	15.9"	27.3"	30.4"	22.6"	0.0"	-42.4"
TRAJ: 600 yd. zero	-1.5"	22.9"	41.4"	51.7"	50.9"	35.3"	0.0"
VELOCITY (fps)	2700	2340	2015	1724	1463	1247	1094
ENERGY (ft. lbs.)	1781	1338	992	726	523	380	292
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-18.7"	-44.3"	-86.4"	-149.3"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-11.3"	-34.4"	-74.0"	-134.5"
TRAJ: 300 yd. zero	-1.5"	6.3"	7.6"	0.0"	-19.3"	-55.1"	-111.8"
TRAJ: 400 yd. zero	-1.5"	11.1"	17.2"	14.5"	0.0"	-30.9"	-82.8"
TRAJ: 500 yd. zero	-1.5"	17.3"	29.6"	33.1"	24.8"	0.0"	-45.6"
TRAJ: 600 yd. zero	-1.5"	24.9"	44.9"	55.9"	55.2"	38.1"	0.0"
VELOCITY (fps)	2600	2249	1934	1653	1402	1202	1065
ENERGY (ft. lbs.)	1652	1236	913	667	480	353	277
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-20.8"	-48.9"	-94.9"	-163.2"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.4"	-37.7"	-80.9"	-146.4"
TRAJ: 300 yd. zero	-1.5"	6.9"	8.3"	0.0"	-21.1"	-60.2"	-121.5"
TRAJ: 400 yd. zero	-1.5"	12.2"	18.9"	15.9"	0.0"	-33.7"	-89.8"
TRAJ: 500 yd. zero	-1.5"	19.0"	32.4"	36.1"	27.0"	0.0"	-49.3"
TRAJ: 600 yd. zero	-1.5"	27.2"	48.8"	60.8"	59.9"	41.1"	0.0"
VELOCITY (fps)	2500	2159	1852	1582	1343	1161	1038
ENERGY (ft. lbs.)	1527	1139	838	612	441	329	263
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.1"	-22.9"	-53.4"	-102.9"	-175.4"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-13.6"	-41.1"	-87.4"	-156.9"
TRAJ: 300 yd. zero	-1.5"	7.6"	9.1"	0.0"	-22.8"	-64.6"	-129.5"
TRAJ: 400 yd. zero	-1.5"	13.4"	20.6"	17.2"	0.0"	-36.0"	-95.2"
TRAJ: 500 yd. zero	-1.5"	20.6"	35.0"	38.8"	28.9"	0.0"	-51.9"
TRAJ: 600 yd. zero	-1.5"	29.2"	52.3"	64.8"	63.5"	43.3"	0.0"



**30 CALIBER (.308" Dia.) 130 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .196 BALLISTIC COEFFICIENT: .299

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3700	3337	2994	2672	2372	2096	1844
ENERGY (ft. lbs.)	3953	3215	2589	2061	1624	1269	982
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.6"	-7.3"	-18.0"	-35.1"	-60.1"
TRAJ: 200 yd. zero	-1.5"	.8"	0.0"	-4.8"	-14.6"	-30.9"	-55.1"
TRAJ: 300 yd. zero	-1.5"	2.4"	3.2"	0.0"	-8.2"	-22.9"	-45.5"
TRAJ: 400 yd. zero	-1.5"	4.5"	7.3"	6.2"	0.0"	-12.5"	-33.1"
TRAJ: 500 yd. zero	-1.5"	7.0"	12.4"	13.8"	10.1"	0.0"	-18.0"
TRAJ: 600 yd. zero	-1.5"	10.0"	18.4"	22.8"	22.1"	15.0"	0.0"
VELOCITY (fps)	3600	3242	2905	2588	2295	2026	1780
ENERGY (ft. lbs.)	3742	3035	2437	1935	1521	1185	915
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-7.9"	-19.3"	-37.3"	-64.1"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-5.1"	-15.5"	-32.6"	-58.5"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.4"	0.0"	-8.6"	-24.0"	-48.2"
TRAJ: 400 yd. zero	-1.5"	4.8"	7.8"	6.5"	0.0"	-13.1"	-35.2"
TRAJ: 500 yd. zero	-1.5"	7.5"	13.1"	14.4"	10.5"	0.0"	-19.4"
TRAJ: 600 yd. zero	-1.5"	10.7"	19.5"	24.1"	23.5"	16.2"	0.0"
VELOCITY (fps)	3500	3148	2816	2506	2219	1956	1717
ENERGY (ft. lbs.)	3537	2861	2290	1813	1422	1105	851
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.7"	-20.9"	-40.4"	-68.9"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.5"	-16.8"	-35.2"	-62.6"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.7"	0.0"	-9.3"	-25.9"	-51.5"
TRAJ: 400 yd. zero	-1.5"	5.2"	8.4"	7.0"	0.0"	-14.1"	-37.4"
TRAJ: 500 yd. zero	-1.5"	8.1"	14.1"	15.8"	11.4"	0.0"	-20.4"
TRAJ: 600 yd. zero	-1.5"	11.5"	20.9"	25.8"	25.0"	17.0"	0.0"
VELOCITY (fps)	3400	3054	2728	2423	2143	1887	1655
ENERGY (ft. lbs.)	3338	2693	2149	1696	1327	1028	791
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.3"	-22.3"	-43.2"	-74.1"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.8"	-17.6"	-37.4"	-67.1"
TRAJ: 300 yd. zero	-1.5"	3.1"	3.9"	0.0"	-9.8"	-27.6"	-55.4"
TRAJ: 400 yd. zero	-1.5"	5.8"	8.8"	7.4"	0.0"	-15.3"	-40.6"
TRAJ: 500 yd. zero	-1.5"	8.7"	15.0"	16.8"	12.3"	0.0"	-22.2"
TRAJ: 600 yd. zero	-1.5"	12.4"	22.4"	27.7"	27.1"	18.5"	0.0"
VELOCITY (fps)	3300	2960	2639	2342	2069	1819	1595
ENERGY (ft. lbs.)	3144	2529	2011	1583	1236	955	735
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.5"	-10.2"	-24.3"	-46.6"	-79.4"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.3"	-19.2"	-40.1"	-71.7"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.3"	0.0"	-10.6"	-29.4"	-58.9"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.6"	8.0"	0.0"	-16.1"	-42.9"
TRAJ: 500 yd. zero	-1.5"	9.3"	16.0"	17.7"	12.9"	0.0"	-23.5"
TRAJ: 600 yd. zero	-1.5"	13.2"	23.9"	29.5"	28.6"	19.6"	0.0"
VELOCITY (fps)	3200	2865	2551	2261	1994	1751	1536
ENERGY (ft. lbs.)	2957	2371	1879	1476	1149	886	681
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-11.1"	-26.4"	-50.5"	-86.6"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.9"	-20.8"	-43.6"	-78.2"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.6"	0.0"	-11.6"	-32.0"	-64.3"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.4"	8.7"	0.0"	-17.5"	-46.9"
TRAJ: 500 yd. zero	-1.5"	10.1"	17.4"	19.2"	14.0"	0.0"	-25.9"
TRAJ: 600 yd. zero	-1.5"	14.4"	26.1"	32.2"	31.3"	21.6"	0.0"
VELOCITY (fps)	3100	2771	2464	2180	1921	1685	1468
ENERGY (ft. lbs.)	2775	2218	1753	1373	1065	820	622
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-12.0"	-28.3"	-54.6"	-92.7"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.3"	-22.1"	-46.8"	-83.3"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.9"	0.0"	-12.2"	-34.5"	-68.5"
TRAJ: 400 yd. zero	-1.5"	7.1"	11.1"	9.2"	0.0"	-19.1"	-50.1"
TRAJ: 500 yd. zero	-1.5"	10.9"	18.7"	20.7"	15.3"	0.0"	-27.1"
TRAJ: 600 yd. zero	-1.5"	15.5"	27.8"	34.3"	33.4"	22.6"	0.0"
VELOCITY (fps)	3000	2677	2377	2101	1848	1621	1412
ENERGY (ft. lbs.)	2599	2070	1631	1274	986	758	575
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-13.3"	-31.1"	-59.4"	-100.8"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.0"	-24.1"	-50.7"	-90.3"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-13.3"	-37.2"	-74.1"
TRAJ: 400 yd. zero	-1.5"	7.8"	12.1"	10.0"	0.0"	-20.4"	-54.0"
TRAJ: 500 yd. zero	-1.5"	11.9"	20.3"	22.3"	16.4"	0.0"	-29.5"
TRAJ: 600 yd. zero	-1.5"	16.8"	30.1"	37.1"	36.1"	24.6"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2584	2291	2022	1776	1557	1357
ENERGY (ft. lbs.)	2428	1927	1515	1180	911	700	531
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.3"	- 33.7"	- 64.2"	- 109.1"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.8"	- 26.1"	- 54.8"	- 97.7"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.8"	0.0"	- 14.6"	- 40.2"	- 80.4"
TRAJ: 400 yd. zero	- 1.5"	8.4"	13.1"	11.0"	0.0"	- 21.9"	- 58.4"
TRAJ: 500 yd. zero	- 1.5"	12.8"	21.9"	24.2"	17.6"	0.0"	- 32.0"
TRAJ: 600 yd. zero	- 1.5"	18.2"	32.6"	40.2"	39.0"	26.7"	0.0"
VELOCITY (fps)	2800	2490	2205	1943	1705	1486	1296
ENERGY (ft. lbs.)	2264	1791	1404	1090	840	637	485
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.9"	- 36.9"	- 69.7"	- 118.4"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.4"	- 28.3"	- 59.0"	- 105.5"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.3"	0.0"	- 15.6"	- 43.2"	- 86.5"
TRAJ: 400 yd. zero	- 1.5"	9.2"	14.2"	11.8"	0.0"	- 23.6"	- 63.0"
TRAJ: 500 yd. zero	- 1.5"	14.0"	23.6"	25.9"	18.9"	0.0"	- 34.7"
TRAJ: 600 yd. zero	- 1.5"	19.7"	35.2"	43.3"	42.1"	28.9"	0.0"
VELOCITY (fps)	2700	2398	2120	1866	1636	1425	1247
ENERGY (ft. lbs.)	2105	1660	1298	1005	773	587	449
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 17.1"	- 39.7"	- 75.5"	- 128.8"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 10.1"	- 30.4"	- 63.8"	- 114.7"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.8"	0.0"	- 16.8"	- 46.9"	- 94.4"
TRAJ: 400 yd. zero	- 1.5"	9.9"	15.2"	12.6"	0.0"	- 25.8"	- 69.1"
TRAJ: 500 yd. zero	- 1.5"	15.1"	25.6"	28.2"	20.7"	0.0"	- 38.1"
TRAJ: 600 yd. zero	- 1.5"	21.5"	38.3"	47.2"	46.1"	31.8"	0.0"
VELOCITY (fps)	2600	2308	2036	1789	1568	1366	1202
ENERGY (ft. lbs.)	1952	1535	1196	924	710	539	417
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.1"	- 44.4"	- 83.5"	- 141.0"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.2"	- 33.9"	- 70.3"	- 125.1"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.5"	0.0"	- 18.9"	- 51.5"	- 102.8"
TRAJ: 400 yd. zero	- 1.5"	11.1"	17.0"	14.2"	0.0"	- 27.9"	- 74.2"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.1"	30.9"	22.3"	0.0"	- 40.7"
TRAJ: 600 yd. zero	- 1.5"	23.5"	41.7"	51.3"	49.5"	34.0"	0.0"
VELOCITY (fps)	2500	2214	1951	1713	1492	1301	1155
ENERGY (ft. lbs.)	1805	1415	1099	847	643	489	385
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.7"	- 20.8"	- 47.9"	- 91.1"	- 154.2"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.1"	- 36.4"	- 76.6"	- 136.8"
TRAJ: 300 yd. zero	- 1.5"	6.9"	8.1"	0.0"	- 20.2"	- 56.4"	- 112.5"
TRAJ: 400 yd. zero	- 1.5"	12.0"	18.2"	15.2"	0.0"	- 31.1"	- 82.2"
TRAJ: 500 yd. zero	- 1.5"	18.2"	30.7"	33.9"	24.9"	0.0"	- 44.8"
TRAJ: 600 yd. zero	- 1.5"	25.7"	45.6"	56.3"	54.8"	37.4"	0.0"
VELOCITY (fps)	2400	2122	1867	1638	1427	1249	1114
ENERGY (ft. lbs.)	1663	1300	1007	775	588	450	358
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.3"	- 22.7"	- 52.3"	- 99.4"	- 167.2"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 13.2"	- 39.7"	- 83.5"	- 148.2"
TRAJ: 300 yd. zero	- 1.5"	7.6"	8.8"	0.0"	- 22.0"	- 61.5"	- 121.7"
TRAJ: 400 yd. zero	- 1.5"	13.1"	19.9"	16.5"	0.0"	- 33.9"	- 88.7"
TRAJ: 500 yd. zero	- 1.5"	19.9"	33.4"	36.9"	27.2"	0.0"	- 47.9"
TRAJ: 600 yd. zero	- 1.5"	27.9"	49.4"	60.9"	59.1"	40.0"	0.0"

**30 CALIBER (.308" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .358

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3205	2923	2657	2405	2171	1953
ENERGY (ft. lbs.)	4081	3421	2847	2351	1927	1570	1271
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 1.9"	- 8.1"	- 19.3"	- 36.5"	- 61.3"
TRAJ: 200 yd. zero	- 1.5"	1.0"	0.0"	- 5.1"	- 15.3"	- 31.6"	- 55.4"
TRAJ: 300 yd. zero	- 1.5"	2.7"	3.4"	0.0"	- 8.5"	- 23.0"	- 45.1"
TRAJ: 400 yd. zero	- 1.5"	4.8"	7.7"	6.4"	0.0"	- 12.3"	- 32.3"
TRAJ: 500 yd. zero	- 1.5"	7.3"	12.6"	13.8"	9.9"	0.0"	- 17.5"
TRAJ: 600 yd. zero	- 1.5"	10.2"	18.5"	22.6"	21.6"	14.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3109	2833	2571	2325	2097	1884
ENERGY (ft. lbs.)	3851	3221	2674	2202	1801	1465	1183
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.1"	-8.8"	-20.9"	-39.4"	-66.1"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.5"	-16.5"	-33.9"	-59.5"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.7"	0.0"	-9.1"	-24.7"	-48.4"
TRAJ: 400 yd. zero	-1.5"	5.2"	8.3"	6.9"	0.0"	-13.2"	-34.7"
TRAJ: 500 yd. zero	-1.5"	7.9"	13.6"	14.8"	10.6"	0.0"	-18.8"
TRAJ: 600 yd. zero	-1.5"	11.0"	19.9"	24.2"	23.2"	15.7"	0.0"
VELOCITY (fps)	3300	3014	2743	2486	2246	2023	1816
ENERGY (ft. lbs.)	3628	3027	2506	2059	1681	1363	1099
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.5"	-22.3"	-42.2"	-70.9"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.9"	-17.5"	-36.1"	-63.6"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-9.5"	-26.2"	-51.7"
TRAJ: 400 yd. zero	-1.5"	5.6"	8.8"	7.2"	0.0"	-14.2"	-37.3"
TRAJ: 500 yd. zero	-1.5"	8.4"	14.5"	15.8"	11.4"	0.0"	-20.2"
TRAJ: 600 yd. zero	-1.5"	11.8"	21.2"	25.9"	24.9"	16.8"	0.0"
VELOCITY (fps)	3200	2919	2652	2401	2167	1950	1749
ENERGY (ft. lbs.)	3412	2839	2344	1921	1565	1267	1019
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.4"	-24.3"	-45.7"	-76.8"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.4"	-18.9"	-39.0"	-68.7"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.3"	0.0"	-10.3"	-28.3"	-55.8"
TRAJ: 400 yd. zero	-1.5"	6.1"	9.5"	7.8"	0.0"	-15.4"	-40.3"
TRAJ: 500 yd. zero	-1.5"	9.2"	15.6"	17.0"	12.3"	0.0"	-21.8"
TRAJ: 600 yd. zero	-1.5"	12.8"	22.9"	27.9"	26.9"	18.2"	0.0"
VELOCITY (fps)	3100	2824	2562	2317	2089	1878	1683
ENERGY (ft. lbs.)	3202	2657	2188	1789	1454	1174	943
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.4"	-26.4"	-49.7"	-82.6"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.0"	-20.5"	-42.3"	-73.7"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.1"	-30.6"	-59.7"
TRAJ: 400 yd. zero	-1.5"	6.6"	10.3"	8.4"	0.0"	-16.6"	-42.9"
TRAJ: 500 yd. zero	-1.5"	10.0"	16.9"	18.4"	13.3"	0.0"	-22.9"
TRAJ: 600 yd. zero	-1.5"	13.8"	24.6"	29.9"	28.6"	19.1"	0.0"
VELOCITY (fps)	3000	2729	2473	2234	2012	1806	1618
ENERGY (ft. lbs.)	2998	2481	2038	1663	1349	1087	873
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.3"	-28.6"	-53.7"	-89.7"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.3"	-21.9"	-45.5"	-79.8"
TRAJ: 300 yd. zero	-1.5"	4.1"	4.9"	0.0"	-12.1"	-33.2"	-65.0"
TRAJ: 400 yd. zero	-1.5"	7.2"	11.0"	9.1"	0.0"	-18.0"	-46.8"
TRAJ: 500 yd. zero	-1.5"	10.8"	18.2"	19.9"	14.4"	0.0"	-25.1"
TRAJ: 600 yd. zero	-1.5"	15.0"	26.6"	32.5"	31.2"	21.0"	0.0"
VELOCITY (fps)	2900	2634	2384	2152	1935	1735	1555
ENERGY (ft. lbs.)	2802	2312	1894	1542	1248	1003	806
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-13.3"	-31.0"	-57.7"	-97.0"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.0"	-23.9"	-48.8"	-86.3"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-13.1"	-35.4"	-70.2"
TRAJ: 400 yd. zero	-1.5"	7.8"	12.0"	9.9"	0.0"	-18.9"	-50.4"
TRAJ: 500 yd. zero	-1.5"	11.6"	19.8"	21.3"	15.2"	0.0"	-27.7"
TRAJ: 600 yd. zero	-1.5"	16.2"	28.8"	35.1"	33.7"	23.1"	0.0"
VELOCITY (fps)	2800	2540	2296	2070	1859	1666	1483
ENERGY (ft. lbs.)	2612	2149	1757	1427	1152	925	733
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-14.7"	-34.1"	-63.5"	-105.6"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.8"	-26.1"	-53.5"	-93.8"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.9"	0.0"	-14.3"	-38.8"	-76.0"
TRAJ: 400 yd. zero	-1.5"	8.5"	13.1"	10.8"	0.0"	-20.8"	-54.4"
TRAJ: 500 yd. zero	-1.5"	12.7"	21.4"	23.3"	16.7"	0.0"	-29.4"
TRAJ: 600 yd. zero	-1.5"	17.6"	31.2"	38.0"	36.3"	24.5"	0.0"
VELOCITY (fps)	2700	2446	2209	1988	1784	1599	1423
ENERGY (ft. lbs.)	2429	1993	1625	1317	1060	852	675
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.3"	-37.0"	-69.3"	-115.1"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.6"	-28.0"	-58.2"	-101.7"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.4"	0.0"	-15.1"	-42.0"	-82.4"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.0"	11.4"	0.0"	-23.1"	-59.6"
TRAJ: 500 yd. zero	-1.5"	13.9"	23.3"	25.2"	18.5"	0.0"	-31.9"
TRAJ: 600 yd. zero	-1.5"	19.2"	33.9"	41.2"	39.8"	26.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2352	2122	1908	1710	1533	1364
ENERGY (ft. lbs.)	2252	1844	1500	1213	974	783	620
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.0"	-17.7"	-40.4"	-75.2"	-124.9"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-10.2"	-30.4"	-62.7"	-109.9"
TRAJ: 300 yd. zero	-1.5"	5.9"	6.8"	0.0"	-16.7"	-45.6"	-89.3"
TRAJ: 400 yd. zero	-1.5"	10.1"	15.2"	12.5"	0.0"	-24.7"	-64.2"
TRAJ: 500 yd. zero	-1.5"	15.1"	25.1"	27.4"	19.8"	0.0"	-34.6"
TRAJ: 600 yd. zero	-1.5"	20.8"	36.6"	44.7"	42.9"	28.9"	0.0"
VELOCITY (fps)	2500	2259	2035	1827	1638	1458	1299
ENERGY (ft. lbs.)	2082	1701	1380	1113	893	708	563
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.4"	-19.4"	-43.8"	-81.3"	-135.7"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-11.3"	-33.0"	-67.7"	-119.4"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.6"	0.0"	-17.9"	-48.8"	-96.7"
TRAJ: 400 yd. zero	-1.5"	11.0"	16.5"	13.5"	0.0"	-26.4"	-69.8"
TRAJ: 500 yd. zero	-1.5"	16.3"	27.1"	29.3"	21.2"	0.0"	-38.1"
TRAJ: 600 yd. zero	-1.5"	22.6"	39.8"	48.4"	46.6"	31.8"	0.0"
VELOCITY (fps)	2400	2166	1949	1748	1566	1394	1247
ENERGY (ft. lbs.)	1919	1563	1265	1018	817	647	518
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.1"	-21.7"	-49.1"	-90.5"	-149.5"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-12.5"	-36.9"	-75.2"	-131.2"
TRAJ: 300 yd. zero	-1.5"	7.3"	8.4"	0.0"	-20.1"	-54.2"	-106.0"
TRAJ: 400 yd. zero	-1.5"	12.3"	18.5"	15.1"	0.0"	-29.0"	-75.7"
TRAJ: 500 yd. zero	-1.5"	18.1"	30.1"	32.5"	23.2"	0.0"	-40.9"
TRAJ: 600 yd. zero	-1.5"	24.9"	43.7"	53.0"	50.5"	34.1"	0.0"
VELOCITY (fps)	2300	2073	1863	1669	1486	1324	1191
ENERGY (ft. lbs.)	1782	1432	1156	928	736	584	472
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.9"	-24.0"	-53.8"	-100.1"	-166.4"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-13.6"	-40.0"	-82.8"	-145.6"
TRAJ: 300 yd. zero	-1.5"	8.0"	9.1"	0.0"	-21.8"	-60.1"	-118.4"
TRAJ: 400 yd. zero	-1.5"	13.5"	20.0"	16.4"	0.0"	-32.7"	-85.6"
TRAJ: 500 yd. zero	-1.5"	20.0"	33.1"	36.1"	26.2"	0.0"	-46.2"
TRAJ: 600 yd. zero	-1.5"	27.7"	48.6"	59.2"	57.1"	38.6"	0.0"
VELOCITY (fps)	2200	1980	1777	1592	1417	1266	1147
ENERGY (ft. lbs.)	1612	1306	1051	844	669	534	439
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.5"	-26.1"	-58.6"	-108.6"	-180.9"
TRAJ: 200 yd. zero	-1.5"	3.8"	0.0"	-14.8"	-43.5"	-89.8"	-158.3"
TRAJ: 300 yd. zero	-1.5"	8.7"	9.9"	0.0"	-23.6"	-65.0"	-128.5"
TRAJ: 400 yd. zero	-1.5"	14.7"	21.8"	17.8"	0.0"	-35.4"	-93.0"
TRAJ: 500 yd. zero	-1.5"	21.7"	35.9"	39.0"	28.3"	0.0"	-50.5"
TRAJ: 600 yd. zero	-1.5"	30.2"	52.8"	64.3"	62.0"	42.1"	0.0"

**30 CALIBER (.308" Dia.) 150 GRAIN FULL METAL JACKET**

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .453

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3265	3040	2823	2615	2417	2230
ENERGY (ft. lbs.)	4081	3552	3078	2655	2278	1946	1657
TRAJ: 100 yd. zero	-1.5"	0.0"	-1.8"	-7.5"	-17.7"	-33.0"	-54.6"
TRAJ: 200 yd. zero	-1.5"	.9"	0.0"	-4.7"	-14.0"	-28.4"	-49.0"
TRAJ: 300 yd. zero	-1.5"	2.5"	3.2"	0.0"	-7.6"	-20.4"	-39.4"
TRAJ: 400 yd. zero	-1.5"	4.4"	7.0"	5.7"	0.0"	-10.9"	-28.0"
TRAJ: 500 yd. zero	-1.5"	6.6"	11.4"	12.3"	8.7"	0.0"	-14.9"
TRAJ: 600 yd. zero	-1.5"	9.1"	16.3"	19.7"	18.7"	12.4"	0.0"
VELOCITY (fps)	3400	3189	2947	2734	2530	2337	2154
ENERGY (ft. lbs.)	3851	3346	2894	2490	2133	1819	1546
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.1"	-18.9"	-35.3"	-58.2"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.0"	-14.8"	-30.2"	-52.1"
TRAJ: 300 yd. zero	-1.5"	2.7"	3.4"	0.0"	-8.0"	-21.7"	-41.9"
TRAJ: 400 yd. zero	-1.5"	4.7"	7.4"	6.1"	0.0"	-11.6"	-29.8"
TRAJ: 500 yd. zero	-1.5"	7.1"	12.1"	13.0"	9.3"	0.0"	-15.8"
TRAJ: 600 yd. zero	-1.5"	9.7"	17.4"	21.0"	19.9"	13.2"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3073	2855	2648	2446	2257	2079
ENERGY (ft. lbs.)	3628	3146	2715	2332	1993	1697	1440
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.2"	- 8.7"	- 20.3"	- 37.8"	- 62.3"
TRAJ: 200 yd. zero	- 1.5"	1.1"	0.0"	- 5.4"	- 15.8"	- 32.2"	- 55.5"
TRAJ: 300 yd. zero	- 1.5"	2.9"	3.8"	0.0"	- 8.6"	- 23.1"	- 44.7"
TRAJ: 400 yd. zero	- 1.5"	5.1"	7.9"	6.5"	0.0"	- 12.4"	- 31.8"
TRAJ: 500 yd. zero	- 1.5"	7.6"	12.9"	13.9"	9.9"	0.0"	- 16.9"
TRAJ: 600 yd. zero	- 1.5"	10.4"	18.5"	22.4"	21.2"	14.1"	0.0"
VELOCITY (fps)	3200	2977	2783	2557	2362	2178	2005
ENERGY (ft. lbs.)	3412	2952	2543	2179	1859	1581	1339
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.7"	- 22.1"	- 41.0"	- 67.2"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 6.0"	- 17.2"	- 34.8"	- 59.9"
TRAJ: 300 yd. zero	- 1.5"	3.2"	4.0"	0.0"	- 9.2"	- 24.8"	- 47.8"
TRAJ: 400 yd. zero	- 1.5"	5.5"	8.6"	8.9"	0.0"	- 13.2"	- 34.0"
TRAJ: 500 yd. zero	- 1.5"	8.2"	13.9"	14.9"	10.6"	0.0"	- 18.0"
TRAJ: 600 yd. zero	- 1.5"	11.2"	20.0"	23.9"	22.7"	15.1"	0.0"
VELOCITY (fps)	3100	2881	2670	2470	2280	2100	1931
ENERGY (ft. lbs.)	3202	2765	2376	2032	1731	1469	1242
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 10.7"	- 24.6"	- 45.0"	- 73.3"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.4"	- 18.9"	- 37.9"	- 64.8"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.3"	0.0"	- 10.3"	- 27.1"	- 51.9"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.5"	7.7"	0.0"	- 14.2"	- 36.4"
TRAJ: 500 yd. zero	- 1.5"	9.0"	15.2"	16.3"	11.4"	0.0"	- 19.3"
TRAJ: 600 yd. zero	- 1.5"	12.2"	21.6"	26.0"	24.3"	16.1"	0.0"
VELOCITY (fps)	3000	2785	2578	2383	2197	2022	1858
ENERGY (ft. lbs.)	2998	2584	2215	1891	1609	1363	1150
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 11.8"	- 26.6"	- 48.6"	- 79.1"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 6.9"	- 20.4"	- 40.8"	- 69.7"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.7"	0.0"	- 11.0"	- 29.1"	- 55.7"
TRAJ: 400 yd. zero	- 1.5"	6.7"	10.2"	8.3"	0.0"	- 15.2"	- 39.1"
TRAJ: 500 yd. zero	- 1.5"	9.7"	16.3"	17.5"	12.2"	0.0"	- 20.7"
TRAJ: 600 yd. zero	- 1.5"	13.2"	23.2"	27.9"	26.1"	17.3"	0.0"
VELOCITY (fps)	2900	2689	2487	2296	2116	1945	1785
ENERGY (ft. lbs.)	2802	2409	2061	1756	1491	1261	1062
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.7"	- 28.9"	- 53.3"	- 87.3"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.5"	- 22.0"	- 44.7"	- 77.0"
TRAJ: 300 yd. zero	- 1.5"	4.3"	5.1"	0.0"	- 11.9"	- 32.0"	- 61.8"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.0"	9.0"	0.0"	- 17.1"	- 43.9"
TRAJ: 500 yd. zero	- 1.5"	10.7"	17.9"	19.3"	13.7"	0.0"	- 23.3"
TRAJ: 600 yd. zero	- 1.5"	14.6"	25.7"	30.9"	29.3"	19.5"	0.0"
VELOCITY (fps)	2800	2593	2396	2210	2035	1869	1714
ENERGY (ft. lbs.)	2612	2240	1913	1628	1379	1164	979
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 13.9"	- 31.5"	- 57.9"	- 93.7"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.2"	- 23.8"	- 48.3"	- 82.2"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.5"	0.0"	- 12.9"	- 34.8"	- 65.8"
TRAJ: 400 yd. zero	- 1.5"	7.9"	11.9"	9.7"	0.0"	- 18.4"	- 46.4"
TRAJ: 500 yd. zero	- 1.5"	11.8"	19.3"	20.8"	14.8"	0.0"	- 24.2"
TRAJ: 600 yd. zero	- 1.5"	15.6"	27.4"	32.9"	31.0"	20.2"	0.0"
VELOCITY (fps)	2700	2498	2306	2125	1954	1794	1645
ENERGY (ft. lbs.)	2429	2078	1772	1505	1273	1072	901
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.3"	- 34.4"	- 63.0"	- 102.2"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 8.9"	- 25.9"	- 52.4"	- 89.4"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.0"	0.0"	- 14.0"	- 37.5"	- 71.6"
TRAJ: 400 yd. zero	- 1.5"	8.6"	13.0"	10.5"	0.0"	- 20.0"	- 50.5"
TRAJ: 500 yd. zero	- 1.5"	12.6"	21.0"	22.5"	16.0"	0.0"	- 26.5"
TRAJ: 600 yd. zero	- 1.5"	17.0"	29.8"	35.8"	33.7"	22.1"	0.0"
VELOCITY (fps)	2600	2403	2217	2041	1875	1719	1577
ENERGY (ft. lbs.)	2252	1924	1637	1387	1171	985	828
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 16.8"	- 37.8"	- 68.9"	- 112.0"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.7"	- 28.2"	- 57.1"	- 97.8"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.5"	0.0"	- 15.2"	- 40.9"	- 78.3"
TRAJ: 400 yd. zero	- 1.5"	9.4"	14.1"	11.4"	0.0"	- 21.8"	- 55.4"
TRAJ: 500 yd. zero	- 1.5"	13.8"	22.9"	24.5"	17.5"	0.0"	- 29.2"
TRAJ: 600 yd. zero	- 1.5"	18.7"	32.6"	39.2"	37.0"	24.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2308	2127	1956	1795	1646	1500
ENERGY (ft. lbs.)	2082	1775	1508	1275	1074	903	749
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 18.5"	- 41.3"	- 74.7"	- 121.1"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 10.6"	- 30.8"	- 61.5"	- 105.3"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.1"	0.0"	- 16.6"	- 43.8"	- 83.9"
TRAJ: 400 yd. zero	- 1.5"	10.3"	15.4"	12.5"	0.0"	- 23.0"	- 59.0"
TRAJ: 500 yd. zero	- 1.5"	15.0"	24.6"	26.3"	18.5"	0.0"	- 31.4"
TRAJ: 600 yd. zero	- 1.5"	20.2"	35.1"	42.0"	39.4"	26.2"	0.0"
VELOCITY (fps)	2400	2214	2038	1872	1717	1575	1434
ENERGY (ft. lbs.)	1919	1633	1384	1168	982	826	685
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.8"	- 20.5"	- 45.7"	- 82.7"	- 134.1"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 11.7"	- 33.9"	- 68.0"	- 116.5"
TRAJ: 300 yd. zero	- 1.5"	6.9"	7.8"	0.0"	- 18.3"	- 48.5"	- 93.0"
TRAJ: 400 yd. zero	- 1.5"	11.4"	17.0"	13.7"	0.0"	- 25.6"	- 65.6"
TRAJ: 500 yd. zero	- 1.5"	16.6"	27.2"	29.1"	20.5"	0.0"	- 34.8"
TRAJ: 600 yd. zero	- 1.5"	22.4"	38.8"	46.5"	43.7"	29.1"	0.0"
VELOCITY (fps)	2300	2119	1949	1788	1640	1494	1361
ENERGY (ft. lbs.)	1662	1496	1265	1066	896	744	617
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.6"	- 22.8"	- 49.9"	- 90.2"	- 146.6"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 12.9"	- 36.7"	- 73.7"	- 126.8"
TRAJ: 300 yd. zero	- 1.5"	7.8"	8.6"	0.0"	- 19.5"	- 52.1"	- 101.0"
TRAJ: 400 yd. zero	- 1.5"	12.5"	18.4"	14.6"	0.0"	- 27.8"	- 71.7"
TRAJ: 500 yd. zero	- 1.5"	18.0"	29.5"	31.3"	22.3"	0.0"	- 38.3"
TRAJ: 600 yd. zero	- 1.5"	24.4"	42.3"	50.5"	47.8"	32.0"	0.0"
VELOCITY (fps)	2200	2025	1860	1706	1564	1425	1299
ENERGY (ft. lbs.)	1612	1366	1153	969	815	676	562
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.0"	- 24.3"	- 54.3"	- 98.2"	- 160.3"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 13.7"	- 40.2"	- 80.5"	- 139.1"
TRAJ: 300 yd. zero	- 1.5"	8.1"	9.2"	0.0"	- 21.8"	- 57.6"	- 111.6"
TRAJ: 400 yd. zero	- 1.5"	13.6"	20.1"	16.4"	0.0"	- 30.3"	- 78.8"
TRAJ: 500 yd. zero	- 1.5"	19.6"	32.2"	34.6"	24.3"	0.0"	- 42.4"
TRAJ: 600 yd. zero	- 1.5"	26.7"	46.4"	55.8"	52.6"	35.4"	0.0"

## 30 CALIBER (.308" Dia.) 150 GRAIN ROUND NOSE

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .185

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3000	2738	2489	2257	2040	1838	1653
ENERGY (ft. lbs.)	2998	2497	2064	1697	1386	1126	911
TRAJ: 50 yd. zero	- 1.5"	0.0"	.3"	- .7"	- 3.6"	- 8.7"	- 16.4"
TRAJ: 100 yd. zero	- 1.5"	-.1"	0.0"	- 1.2"	- 4.3"	- 9.5"	- 17.4"
TRAJ: 150 yd. zero	- 1.5"	.3"	.9"	0.0"	- 2.6"	- 7.3"	- 14.8"
TRAJ: 200 yd. zero	- 1.5"	.9"	2.2"	2.0"	0.0"	- 4.1"	- 10.9"
TRAJ: 250 yd. zero	- 1.5"	1.7"	3.8"	4.4"	3.3"	0.0"	- 6.0"
TRAJ: 300 yd. zero	- 1.5"	2.7"	5.8"	7.4"	7.3"	5.0"	0.0"
VELOCITY (fps)	2900	2643	2400	2174	1963	1767	1589
ENERGY (ft. lbs.)	2802	2327	1919	1574	1283	1040	841
TRAJ: 50 yd. zero	- 1.5"	0.0"	.2"	- 1.1"	- 4.3"	- 9.9"	- 18.3"
TRAJ: 100 yd. zero	- 1.5"	-.1"	0.0"	- 1.4"	- 4.8"	- 10.4"	- 18.9"
TRAJ: 150 yd. zero	- 1.5"	.4"	1.0"	0.0"	- 2.8"	- 8.0"	- 16.0"
TRAJ: 200 yd. zero	- 1.5"	1.1"	2.4"	2.2"	0.0"	- 4.4"	- 11.7"
TRAJ: 250 yd. zero	- 1.5"	2.0"	4.2"	4.9"	3.6"	0.0"	- 6.3"
TRAJ: 300 yd. zero	- 1.5"	3.1"	6.3"	8.0"	7.9"	5.3"	0.0"
VELOCITY (fps)	2800	2548	2312	2091	1886	1696	1516
ENERGY (ft. lbs.)	2612	2163	1780	1457	1185	959	785
TRAJ: 50 yd. zero	- 1.5"	0.0"	.1"	- 1.4"	- 5.0"	- 11.1"	- 20.2"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.6"	- 5.3"	- 11.4"	- 20.6"
TRAJ: 150 yd. zero	- 1.5"	.5"	1.1"	0.0"	- 3.1"	- 8.7"	- 17.3"
TRAJ: 200 yd. zero	- 1.5"	1.3"	2.7"	2.4"	0.0"	- 4.7"	- 12.6"
TRAJ: 250 yd. zero	- 1.5"	2.2"	4.6"	5.2"	3.8"	0.0"	- 6.9"
TRAJ: 300 yd. zero	- 1.5"	3.4"	6.9"	8.7"	8.4"	5.8"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2700	2454	2224	2009	1810	1627	1454
ENERGY (ft. lbs.)	2429	2008	1647	1345	1091	882	704
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 1.7"	- 5.6"	- 12.4"	- 22.3"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.7"	- 5.6"	- 12.4"	- 22.3"
TRAJ: 150 yd. zero	- 1.5"	.8"	1.2"	0.0"	- 3.3"	- 9.4"	- 18.8"
TRAJ: 200 yd. zero	- 1.5"	1.4"	2.8"	2.5"	0.0"	- 5.2"	- 13.8"
TRAJ: 250 yd. zero	- 1.5"	2.5"	5.0"	5.7"	4.2"	0.0"	- 7.5"
TRAJ: 300 yd. zero	- 1.5"	3.7"	7.5"	9.4"	9.2"	6.3"	0.0"
VELOCITY (fps)	2600	2360	2136	1928	1735	1560	1394
ENERGY (ft. lbs.)	2252	1856	1521	1238	1003	811	647
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 2.1"	- 6.5"	- 13.8"	- 24.7"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.9"	- 6.3"	- 13.6"	- 24.4"
TRAJ: 150 yd. zero	- 1.5"	.7"	1.3"	0.0"	- 3.7"	- 10.2"	- 20.5"
TRAJ: 200 yd. zero	- 1.5"	1.6"	3.2"	2.8"	0.0"	- 5.6"	- 14.9"
TRAJ: 250 yd. zero	- 1.5"	2.8"	5.4"	6.2"	4.5"	0.0"	- 8.1"
TRAJ: 300 yd. zero	- 1.5"	4.1"	8.2"	10.3"	10.0"	6.8"	0.0"
VELOCITY (fps)	2500	2267	2049	1847	1661	1484	1326
ENERGY (ft. lbs.)	2082	1712	1399	1137	919	734	586
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .2"	- 2.5"	- 7.6"	- 15.7"	- 28.0"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.2"	- 7.1"	- 15.1"	- 27.3"
TRAJ: 150 yd. zero	- 1.5"	.9"	1.5"	0.0"	- 4.1"	- 11.4"	- 22.8"
TRAJ: 200 yd. zero	- 1.5"	1.9"	3.6"	3.1"	0.0"	- 6.2"	- 16.5"
TRAJ: 250 yd. zero	- 1.5"	3.1"	6.1"	6.9"	5.0"	0.0"	- 9.1"
TRAJ: 300 yd. zero	- 1.5"	4.7"	9.1"	11.4"	11.0"	7.6"	0.0"
VELOCITY (fps)	2400	2173	1962	1766	1589	1419	1271
ENERGY (ft. lbs.)	1919	1574	1283	1040	841	671	538
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .4"	- 3.1"	- 8.7"	- 17.7"	- 31.2"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.5"	- 7.9"	- 16.7"	- 30.0"
TRAJ: 150 yd. zero	- 1.5"	1.1"	1.7"	0.0"	- 4.5"	- 12.4"	- 24.9"
TRAJ: 200 yd. zero	- 1.5"	2.2"	4.0"	3.4"	0.0"	- 6.8"	- 18.1"
TRAJ: 250 yd. zero	- 1.5"	3.6"	6.7"	7.5"	5.5"	0.0"	- 9.9"
TRAJ: 300 yd. zero	- 1.5"	5.2"	10.0"	12.5"	12.1"	8.3"	0.0"
VELOCITY (fps)	2300	2080	1876	1687	1507	1347	1212
ENERGY (ft. lbs.)	1762	1442	1172	948	757	604	489
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .5"	- 3.5"	- 9.7"	- 19.7"	- 34.5"
TRAJ: 100 yd. zero	- 1.5"	.3"	0.0"	- 2.7"	- 8.6"	- 18.4"	- 32.9"
TRAJ: 150 yd. zero	- 1.5"	1.2"	1.9"	0.0"	- 4.9"	- 13.8"	- 27.3"
TRAJ: 200 yd. zero	- 1.5"	2.4"	4.3"	3.7"	0.0"	- 7.6"	- 20.0"
TRAJ: 250 yd. zero	- 1.5"	4.0"	7.4"	8.3"	6.1"	0.0"	- 10.8"
TRAJ: 300 yd. zero	- 1.5"	5.8"	11.0"	13.7"	13.3"	9.0"	0.0"
VELOCITY (fps)	2200	1987	1789	1609	1437	1287	1166
ENERGY (ft. lbs.)	1612	1316	1067	863	688	552	453
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .7"	- 4.3"	- 11.3"	- 22.6"	- 39.2"
TRAJ: 100 yd. zero	- 1.5"	.4"	0.0"	- 3.2"	- 9.8"	- 20.7"	- 37.0"
TRAJ: 150 yd. zero	- 1.5"	1.5"	2.2"	0.0"	- 5.4"	- 15.3"	- 30.5"
TRAJ: 200 yd. zero	- 1.5"	2.8"	4.9"	4.1"	0.0"	- 8.4"	- 22.2"
TRAJ: 250 yd. zero	- 1.5"	4.5"	8.3"	9.2"	6.8"	0.0"	- 12.1"
TRAJ: 300 yd. zero	- 1.5"	6.5"	12.3"	15.3"	14.8"	10.1"	0.0"

### 30 CALIBER (.308" Dia.) 165 GRAIN SPIRE POINT

SECTIONAL DENSITY: .248 BALLISTIC COEFFICIENT: .400

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3044	2799	2565	2345	2138	1945
ENERGY (ft. lbs.)	3991	3395	2870	2411	2015	1675	1386
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 9.2"	- 21.8"	- 40.6"	- 67.1"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.6"	- 16.9"	- 34.6"	- 59.9"
TRAJ: 300 yd. zero	- 1.5"	3.1"	3.8"	0.0"	- 9.3"	- 25.1"	- 48.6"
TRAJ: 400 yd. zero	- 1.5"	5.4"	8.5"	7.0"	0.0"	- 13.4"	- 34.5"
TRAJ: 500 yd. zero	- 1.5"	8.1"	13.9"	15.1"	10.8"	0.0"	- 18.3"
TRAJ: 600 yd. zero	- 1.5"	11.2"	20.0"	24.3"	23.0"	15.3"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2948	2707	2479	2264	2062	1874
ENERGY (ft. lbs.)	3553	3185	2686	2251	1878	1558	1286
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 10.0"	- 23.1"	- 43.3"	- 71.7"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.0"	- 17.8"	- 36.8"	- 63.8"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.1"	0.0"	- 9.7"	- 26.6"	- 51.6"
TRAJ: 400 yd. zero	- 1.5"	5.8"	8.9"	7.3"	0.0"	- 14.4"	- 37.0"
TRAJ: 500 yd. zero	- 1.5"	8.7"	14.7"	16.0"	11.6"	0.0"	- 19.7"
TRAJ: 600 yd. zero	- 1.5"	12.0"	21.3"	25.8"	24.7"	16.4"	0.0"
VELOCITY (fps)	3100	2852	2616	2393	2183	1987	1803
ENERGY (ft. lbs.)	3522	2982	2508	2098	1747	1447	1192
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.9"	- 10.9"	- 25.0"	- 46.9"	- 77.5"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.5"	- 19.2"	- 39.6"	- 68.8"
TRAJ: 300 yd. zero	- 1.5"	3.6"	4.4"	0.0"	- 10.4"	- 28.6"	- 55.6"
TRAJ: 400 yd. zero	- 1.5"	6.3"	9.6"	7.9"	0.0"	- 15.5"	- 39.9"
TRAJ: 500 yd. zero	- 1.5"	9.4"	15.9"	17.2"	12.5"	0.0"	- 21.2"
TRAJ: 600 yd. zero	- 1.5"	12.9"	22.9"	27.8"	26.6"	17.7"	0.0"
VELOCITY (fps)	3000	2757	2525	2308	2103	1912	1734
ENERGY (ft. lbs.)	3298	2785	2337	1952	1621	1340	1102
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 11.9"	- 27.2"	- 50.9"	- 84.0"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.1"	- 20.8"	- 42.9"	- 74.4"
TRAJ: 300 yd. zero	- 1.5"	4.0"	4.8"	0.0"	- 11.3"	- 30.9"	- 60.1"
TRAJ: 400 yd. zero	- 1.5"	6.8"	10.4"	8.5"	0.0"	- 18.8"	- 43.1"
TRAJ: 500 yd. zero	- 1.5"	10.2"	17.2"	18.6"	13.5"	0.0"	- 22.9"
TRAJ: 600 yd. zero	- 1.5"	14.0"	24.8"	30.1"	28.8"	19.1"	0.0"
VELOCITY (fps)	2900	2662	2435	2223	2024	1838	1666
ENERGY (ft. lbs.)	3082	2596	2174	1811	1502	1238	1018
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 13.1"	- 29.7"	- 55.4"	- 91.5"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.7"	- 22.6"	- 46.4"	- 80.8"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.2"	0.0"	- 12.2"	- 33.5"	- 65.3"
TRAJ: 400 yd. zero	- 1.5"	7.4"	11.3"	9.2"	0.0"	- 18.1"	- 46.9"
TRAJ: 500 yd. zero	- 1.5"	11.1"	18.6"	20.1"	14.6"	0.0"	- 25.0"
TRAJ: 600 yd. zero	- 1.5"	15.3"	27.0"	32.7"	31.3"	20.9"	0.0"
VELOCITY (fps)	2800	2566	2346	2139	1946	1765	1600
ENERGY (ft. lbs.)	2873	2414	2017	1677	1387	1142	938
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.4"	- 32.5"	- 60.5"	- 100.2"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.4"	- 24.6"	- 50.5"	- 88.2"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.7"	0.0"	- 13.3"	- 36.4"	- 71.3"
TRAJ: 400 yd. zero	- 1.5"	8.1"	12.3"	10.0"	0.0"	- 19.7"	- 51.3"
TRAJ: 500 yd. zero	- 1.5"	12.1"	20.2"	21.9"	15.8"	0.0"	- 27.6"
TRAJ: 600 yd. zero	- 1.5"	16.7"	29.4"	35.7"	34.2"	23.0"	0.0"
VELOCITY (fps)	2700	2472	2257	2056	1868	1693	1535
ENERGY (ft. lbs.)	2672	2239	1867	1549	1279	1051	864
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.6"	- 35.3"	- 64.9"	- 107.0"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.2"	- 26.8"	- 54.3"	- 94.3"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.2"	0.0"	- 14.4"	- 38.9"	- 75.7"
TRAJ: 400 yd. zero	- 1.5"	8.8"	13.4"	10.9"	0.0"	- 20.8"	- 54.0"
TRAJ: 500 yd. zero	- 1.5"	13.0"	21.7"	23.3"	16.6"	0.0"	- 29.1"
TRAJ: 600 yd. zero	- 1.5"	17.8"	31.4"	37.9"	36.1"	24.3"	0.0"
VELOCITY (fps)	2600	2378	2169	1974	1791	1623	1482
ENERGY (ft. lbs.)	2477	2072	1724	1427	1175	966	783
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.2"	- 38.8"	- 71.6"	- 117.4"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.1"	- 29.3"	- 59.7"	- 103.1"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.8"	0.0"	- 15.8"	- 42.8"	- 82.8"
TRAJ: 400 yd. zero	- 1.5"	9.7"	14.7"	11.9"	0.0"	- 23.0"	- 59.1"
TRAJ: 500 yd. zero	- 1.5"	14.3"	23.9"	25.7"	18.4"	0.0"	- 31.5"
TRAJ: 600 yd. zero	- 1.5"	19.6"	34.4"	41.4"	39.4"	26.3"	0.0"
VELOCITY (fps)	2500	2284	2081	1891	1715	1555	1400
ENERGY (ft. lbs.)	2290	1911	1587	1311	1078	886	718
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.3"	- 18.7"	- 42.3"	- 78.6"	- 128.4"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 10.7"	- 31.7"	- 65.2"	- 112.4"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.2"	0.0"	- 17.4"	- 47.4"	- 91.0"
TRAJ: 400 yd. zero	- 1.5"	10.8"	15.9"	13.1"	0.0"	- 25.6"	- 64.8"
TRAJ: 500 yd. zero	- 1.5"	15.7"	26.1"	28.4"	20.5"	0.0"	- 34.1"
TRAJ: 600 yd. zero	- 1.5"	21.4"	37.5"	45.5"	43.2"	28.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2190	1993	1809	1640	1477	1330
ENERGY (ft. lbs.)	2111	1758	1456	1199	966	799	649
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 20.8"	- 46.4"	- 85.3"	- 140.2"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 11.8"	- 34.4"	- 70.3"	- 122.3"
TRAJ: 300 yd. zero	- 1.5"	6.9"	7.9"	0.0"	- 18.6"	- 50.8"	- 98.6"
TRAJ: 400 yd. zero	- 1.5"	11.8"	17.2"	14.0"	0.0"	- 27.3"	- 70.6"
TRAJ: 500 yd. zero	- 1.5"	17.1"	28.1"	30.4"	21.9"	0.0"	- 37.8"
TRAJ: 600 yd. zero	- 1.5"	23.4"	40.8"	49.3"	47.1"	31.6"	0.0"
VELOCITY (fps)	2300	2096	1905	1728	1566	1410	1273
ENERGY (ft. lbs.)	1939	1610	1331	1094	899	729	594
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.7"	- 23.2"	- 52.0"	- 94.9"	- 155.2"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 13.1"	- 38.5"	- 78.1"	- 135.0"
TRAJ: 300 yd. zero	- 1.5"	7.8"	8.8"	0.0"	- 20.9"	- 56.1"	- 108.6"
TRAJ: 400 yd. zero	- 1.5"	13.0"	19.3"	15.7"	0.0"	- 29.9"	- 77.2"
TRAJ: 500 yd. zero	- 1.5"	19.0"	31.2"	33.7"	23.9"	0.0"	- 41.3"
TRAJ: 600 yd. zero	- 1.5"	25.9"	45.0"	54.3"	51.5"	34.4"	0.0"
VELOCITY (fps)	2200	2003	1818	1648	1484	1337	1212
ENERGY (ft. lbs.)	1774	1470	1211	995	807	655	539
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.2"	- 25.1"	- 56.1"	- 102.8"	- 169.0"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 14.2"	- 41.5"	- 84.6"	- 147.2"
TRAJ: 300 yd. zero	- 1.5"	8.4"	9.5"	0.0"	- 22.5"	- 60.9"	- 118.8"
TRAJ: 400 yd. zero	- 1.5"	14.0"	20.8"	16.9"	0.0"	- 32.8"	- 84.9"
TRAJ: 500 yd. zero	- 1.5"	20.6"	33.8"	36.5"	26.1"	0.0"	- 45.7"
TRAJ: 600 yd. zero	- 1.5"	28.2"	49.1"	59.4"	56.6"	38.1"	0.0"

### 30 CALIBER (.308" Dia.) 165 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .248 BALLISTIC COEFFICIENT: .459

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3076	2860	2654	2456	2269	2093
ENERGY (ft. lbs.)	3991	3467	2998	2580	2211	1887	1605
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.3"	- 8.9"	- 20.6"	- 38.3"	- 63.0"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.5"	- 16.0"	- 32.5"	- 56.1"
TRAJ: 300 yd. zero	- 1.5"	3.0"	3.7"	0.0"	- 8.7"	- 23.4"	- 45.1"
TRAJ: 400 yd. zero	- 1.5"	5.2"	8.0"	6.5"	0.0"	- 12.5"	- 32.0"
TRAJ: 500 yd. zero	- 1.5"	7.7"	13.0"	14.1"	10.0"	0.0"	- 17.0"
TRAJ: 600 yd. zero	- 1.5"	10.5"	18.7"	22.6"	21.4"	14.2"	0.0"
VELOCITY (fps)	3200	2980	2768	2565	2372	2190	2018
ENERGY (ft. lbs.)	3753	3254	2808	2411	2063	1758	1492
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.5"	- 9.6"	- 22.2"	- 41.1"	- 67.5"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 5.8"	- 17.1"	- 34.8"	- 60.0"
TRAJ: 300 yd. zero	- 1.5"	3.2"	3.9"	0.0"	- 9.3"	- 25.0"	- 48.2"
TRAJ: 400 yd. zero	- 1.5"	5.6"	8.6"	7.0"	0.0"	- 13.3"	- 34.2"
TRAJ: 500 yd. zero	- 1.5"	8.2"	13.9"	15.0"	10.7"	0.0"	- 18.1"
TRAJ: 600 yd. zero	- 1.5"	11.3"	20.0"	24.1"	22.8"	15.1"	0.0"
VELOCITY (fps)	3100	2884	2676	2477	2289	2111	1944
ENERGY (ft. lbs.)	3522	3047	2624	2249	1921	1634	1384
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.7"	- 10.4"	- 23.9"	- 44.3"	- 72.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.3"	- 18.4"	- 37.3"	- 64.2"
TRAJ: 300 yd. zero	- 1.5"	3.5"	4.2"	0.0"	- 10.0"	- 26.8"	- 51.6"
TRAJ: 400 yd. zero	- 1.5"	6.0"	9.2"	7.5"	0.0"	- 14.3"	- 36.6"
TRAJ: 500 yd. zero	- 1.5"	8.9"	15.0"	16.1"	11.5"	0.0"	- 19.4"
TRAJ: 600 yd. zero	- 1.5"	12.1"	21.4"	25.8"	24.4"	16.2"	0.0"
VELOCITY (fps)	3000	2788	2584	2390	2207	2034	1870
ENERGY (ft. lbs.)	3298	2848	2446	2093	1785	1515	1282
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 11.3"	- 25.9"	- 47.7"	- 78.1"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.8"	- 19.8"	- 40.1"	- 69.0"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.5"	0.0"	- 10.7"	- 28.8"	- 55.4"
TRAJ: 400 yd. zero	- 1.5"	6.5"	9.9"	8.1"	0.0"	- 15.3"	- 39.2"
TRAJ: 500 yd. zero	- 1.5"	9.6"	16.1"	17.3"	12.3"	0.0"	- 20.8"
TRAJ: 600 yd. zero	- 1.5"	13.0"	23.0"	27.7"	26.2"	17.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2692	2492	2303	2125	1956	1797
ENERGY (ft. lbs.)	3082	2655	2276	1944	1655	1403	1184
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.3"	-28.1"	-51.6"	-84.4"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.3"	-21.4"	-43.3"	-74.3"
TRAJ: 300 yd. zero	-1.5"	4.1"	4.9"	0.0"	-11.5"	-31.0"	-56.6"
TRAJ: 400 yd. zero	-1.5"	7.0"	10.7"	8.7"	0.0"	-16.5"	-42.2"
TRAJ: 500 yd. zero	-1.5"	10.3"	17.3"	18.6"	13.2"	0.0"	-22.3"
TRAJ: 600 yd. zero	-1.5"	14.1"	24.8"	29.8"	28.1"	18.7"	0.0"
VELOCITY (fps)	2800	2596	2401	2217	2044	1880	1726
ENERGY (ft. lbs.)	2873	2469	2113	1802	1531	1295	1092
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-13.5"	-30.6"	-56.0"	-91.5"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-7.9"	-23.1"	-46.7"	-80.3"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.3"	0.0"	-12.5"	-33.4"	-64.3"
TRAJ: 400 yd. zero	-1.5"	7.7"	11.6"	9.4"	0.0"	-17.8"	-45.6"
TRAJ: 500 yd. zero	-1.5"	11.2"	18.7"	20.1"	14.2"	0.0"	-24.2"
TRAJ: 600 yd. zero	-1.5"	15.3"	26.8"	32.2"	30.4"	20.2"	0.0"
VELOCITY (fps)	2700	2511	2311	2132	1963	1804	1656
ENERGY (ft. lbs.)	2672	2291	1957	1666	1412	1192	1005
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-14.8"	-33.3"	-60.9"	-99.6"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-25.1"	-50.6"	-87.2"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.8"	0.0"	-13.5"	-36.1"	-69.9"
TRAJ: 400 yd. zero	-1.5"	8.3"	12.6"	10.2"	0.0"	-19.2"	-49.6"
TRAJ: 500 yd. zero	-1.5"	12.2"	20.3"	21.7"	15.4"	0.0"	-26.5"
TRAJ: 600 yd. zero	-1.5"	16.6"	29.1"	35.0"	33.1"	22.1"	0.0"
VELOCITY (fps)	2600	2405	2221	2047	1883	1729	1587
ENERGY (ft. lbs.)	2477	2120	1808	1536	1300	1096	923
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.5"	-16.3"	-36.4"	-66.5"	-109.0"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-9.4"	-27.2"	-55.0"	-95.2"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.3"	0.0"	-14.6"	-39.3"	-76.3"
TRAJ: 400 yd. zero	-1.5"	9.1"	13.6"	11.0"	0.0"	-20.9"	-54.3"
TRAJ: 500 yd. zero	-1.5"	-3.3"	22.5"	23.6"	16.8"	0.0"	-29.1"
TRAJ: 600 yd. zero	-1.5"	18.2"	31.8"	38.2"	36.2"	24.3"	0.0"
VELOCITY (fps)	2500	2311	2132	1963	1804	1656	1510
ENERGY (ft. lbs.)	2290	1957	1666	1412	1192	1005	836
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-17.9"	-39.9"	-73.1"	-119.1"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-10.3"	-29.7"	-60.3"	-103.7"
TRAJ: 300 yd. zero	-1.5"	6.0"	6.9"	0.0"	-16.0"	-43.1"	-83.1"
TRAJ: 400 yd. zero	-1.5"	10.0"	14.9"	12.0"	0.0"	-23.1"	-59.1"
TRAJ: 500 yd. zero	-1.5"	14.6"	24.1"	25.9"	18.5"	0.0"	-31.3"
TRAJ: 600 yd. zero	-1.5"	19.9"	34.6"	41.6"	39.4"	26.2"	0.0"
VELOCITY (fps)	2400	2216	2042	1879	1725	1583	1444
ENERGY (ft. lbs.)	2111	1800	1529	1293	1090	919	764
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.7"	-19.8"	-44.1"	-80.8"	-130.8"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.3"	-32.7"	-66.5"	-113.7"
TRAJ: 300 yd. zero	-1.5"	6.6"	7.6"	0.0"	-17.6"	-47.6"	-91.1"
TRAJ: 400 yd. zero	-1.5"	11.0"	16.4"	13.2"	0.0"	-25.6"	-64.7"
TRAJ: 500 yd. zero	-1.5"	16.2"	26.6"	28.6"	20.5"	0.0"	-33.8"
TRAJ: 600 yd. zero	-1.5"	21.8"	37.9"	45.6"	43.1"	28.2"	0.0"
VELOCITY (fps)	2300	2122	1953	1795	1647	1502	1370
ENERGY (ft. lbs.)	1939	1650	1396	1180	995	827	688
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.3"	-22.0"	-49.0"	-88.4"	-144.4"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-12.4"	-36.2"	-72.4"	-125.2"
TRAJ: 300 yd. zero	-1.5"	7.4"	8.3"	0.0"	-19.6"	-51.6"	-100.3"
TRAJ: 400 yd. zero	-1.5"	12.3"	18.1"	14.7"	0.0"	-27.1"	-70.8"
TRAJ: 500 yd. zero	-1.5"	17.7"	29.0"	31.0"	21.7"	0.0"	-38.3"
TRAJ: 600 yd. zero	-1.5"	24.1"	41.8"	50.2"	47.3"	31.9"	0.0"
VELOCITY (fps)	2200	2027	1864	1712	1571	1433	1308
ENERGY (ft. lbs.)	1774	1506	1274	1074	905	752	627
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.1"	-24.6"	-54.9"	-99.1"	-161.3"
TRAJ: 200 yd. zero	-1.5"	3.6"	0.0"	-13.9"	-40.8"	-81.2"	-139.7"
TRAJ: 300 yd. zero	-1.5"	8.2"	9.3"	0.0"	-22.0"	-58.0"	-111.9"
TRAJ: 400 yd. zero	-1.5"	13.7"	20.3"	16.5"	0.0"	-30.4"	-78.8"
TRAJ: 500 yd. zero	-1.5"	19.8"	32.5"	34.8"	24.4"	0.0"	-42.3"
TRAJ: 600 yd. zero	-1.5"	26.9"	46.6"	56.0"	52.6"	35.3"	0.0"

**30 CALIBER (.308" Dia.) 168 GRAIN BOAT TAIL HOLLOW POINT MATCH**  
 SECTIONAL DENSITY: .253 BALLISTIC COEFFICIENT: .505

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3086	2899	2709	2527	2353	2188
ENERGY (ft. lbs.)	4063	3576	3136	2739	2382	2066	1786
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-8.5"	-19.8"	-36.6"	-60.2"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-5.2"	-15.4"	-31.0"	-53.5"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.5"	0.0"	-8.4"	-22.3"	-43.0"
TRAJ: 400 yd. zero	-1.5"	5.0"	7.7"	6.3"	0.0"	-11.7"	-30.4"
TRAJ: 500 yd. zero	-1.5"	7.3"	12.4"	13.4"	9.4"	0.0"	-16.2"
TRAJ: 600 yd. zero	-1.5"	10.0"	17.9"	21.5"	20.3"	13.6"	0.0"
VELOCITY (fps)	3200	2999	2806	2620	2441	2272	2111
ENERGY (ft. lbs.)	3821	3357	2938	2561	2224	1926	1662
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-9.4"	-21.5"	-39.5"	-64.8"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-5.8"	-16.7"	-33.4"	-57.5"
TRAJ: 300 yd. zero	-1.5"	3.2"	3.9"	0.0"	-8.9"	-23.7"	-45.9"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.4"	6.7"	0.0"	-12.5"	-32.4"
TRAJ: 500 yd. zero	-1.5"	7.9"	13.4"	14.3"	10.0"	0.0"	-17.3"
TRAJ: 600 yd. zero	-1.5"	10.8"	19.2"	23.0"	21.6"	14.5"	0.0"
VELOCITY (fps)	3100	2903	2713	2530	2357	2191	2034
ENERGY (ft. lbs.)	3586	3144	2746	2389	2072	1792	1544
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.1"	-23.1"	-42.9"	-70.0"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.2"	-17.8"	-36.3"	-62.0"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.1"	0.0"	-9.6"	-25.9"	-49.6"
TRAJ: 400 yd. zero	-1.5"	5.8"	8.9"	7.2"	0.0"	-13.9"	-35.2"
TRAJ: 500 yd. zero	-1.5"	8.6"	14.5"	15.6"	11.2"	0.0"	-18.5"
TRAJ: 600 yd. zero	-1.5"	11.7"	20.7"	24.8"	23.5"	15.4"	0.0"
VELOCITY (fps)	3000	2807	2620	2442	2272	2111	1958
ENERGY (ft. lbs.)	3358	2939	2562	2225	1927	1663	1431
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.2"	-25.2"	-46.5"	-75.6"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.6"	-19.1"	-36.9"	-66.4"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.4"	0.0"	-10.2"	-27.8"	-53.1"
TRAJ: 400 yd. zero	-1.5"	6.3"	9.6"	7.7"	0.0"	-14.9"	-37.7"
TRAJ: 500 yd. zero	-1.5"	9.3"	15.6"	16.7"	12.0"	0.0"	-19.7"
TRAJ: 600 yd. zero	-1.5"	12.6"	22.2"	26.6"	25.1"	16.5"	0.0"
VELOCITY (fps)	2900	2710	2528	2354	2189	2032	1883
ENERGY (ft. lbs.)	3138	2741	2384	2068	1787	1540	1323
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.2"	-27.8"	-50.7"	-82.1"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.1"	-21.0"	-42.4"	-72.0"
TRAJ: 300 yd. zero	-1.5"	4.1"	4.8"	0.0"	-11.5"	-30.4"	-57.6"
TRAJ: 400 yd. zero	-1.5"	7.0"	10.5"	8.6"	0.0"	-18.0"	-40.3"
TRAJ: 500 yd. zero	-1.5"	10.2"	17.0"	18.3"	12.8"	0.0"	-21.1"
TRAJ: 600 yd. zero	-1.5"	13.7"	24.0"	28.8"	26.9"	17.6"	0.0"
VELOCITY (fps)	2800	2614	2436	2267	2106	1953	1808
ENERGY (ft. lbs.)	2925	2549	2214	1917	1655	1423	1220
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-13.3"	-30.1"	-54.9"	-88.5"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-7.7"	-22.7"	-45.6"	-77.4"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.2"	0.0"	-12.4"	-32.7"	-61.9"
TRAJ: 400 yd. zero	-1.5"	7.5"	11.4"	9.3"	0.0"	-17.2"	-43.3"
TRAJ: 500 yd. zero	-1.5"	11.0"	18.3"	19.6"	13.8"	0.0"	-22.6"
TRAJ: 600 yd. zero	-1.5"	14.8"	25.8"	31.0"	28.9"	18.9"	0.0"
VELOCITY (fps)	2700	2518	2345	2180	2023	1875	1735
ENERGY (ft. lbs.)	2720	2366	2051	1773	1528	1312	1123
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-14.5"	-32.7"	-59.4"	-97.1"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.3"	-24.5"	-49.2"	-84.8"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.6"	0.0"	-13.3"	-35.2"	-68.0"
TRAJ: 400 yd. zero	-1.5"	8.2"	12.3"	10.0"	0.0"	-18.5"	-48.0"
TRAJ: 500 yd. zero	-1.5"	11.9"	19.7"	21.1"	14.8"	0.0"	-25.7"
TRAJ: 600 yd. zero	-1.5"	16.2"	28.3"	34.0"	32.0"	21.5"	0.0"
VELOCITY (fps)	2600	2423	2254	2094	1942	1798	1663
ENERGY (ft. lbs.)	2522	2190	1896	1636	1407	1206	1032
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.5"	-16.3"	-36.2"	-65.3"	-105.1"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-9.5"	-27.1"	-53.9"	-91.5"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.4"	0.0"	-14.4"	-38.0"	-72.5"
TRAJ: 400 yd. zero	-1.5"	9.1"	13.6"	10.9"	0.0"	-20.0"	-50.8"
TRAJ: 500 yd. zero	-1.5"	13.1"	21.6"	22.9"	16.0"	0.0"	-26.7"
TRAJ: 600 yd. zero	-1.5"	17.5"	30.5"	36.3"	33.9"	22.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2328	2184	2008	1881	1721	1593
ENERGY (ft. lbs.)	2332	2021	1747	1505	1292	1106	947
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.0"	- 17.9"	- 39.5"	- 71.2"	- 114.9"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 10.3"	- 29.5"	- 58.7"	- 99.9"
TRAJ: 300 yd. zero	- 1.5"	6.0"	6.9"	0.0"	- 15.6"	- 41.4"	- 79.1"
TRAJ: 400 yd. zero	- 1.5"	9.9"	14.8"	11.8"	0.0"	- 21.8"	- 55.5"
TRAJ: 500 yd. zero	- 1.5"	14.3"	23.5"	24.9"	17.5"	0.0"	- 29.4"
TRAJ: 600 yd. zero	- 1.5"	19.2"	33.3"	39.6"	37.1"	24.5"	0.0"
VELOCITY (fps)	2400	2232	2073	1922	1779	1646	1513
ENERGY (ft. lbs.)	2149	1860	1604	1379	1182	1011	854
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.5"	- 19.7"	- 43.3"	- 78.3"	- 126.3"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 11.3"	- 32.2"	- 64.3"	- 109.8"
TRAJ: 300 yd. zero	- 1.5"	6.6"	7.6"	0.0"	- 17.1"	- 45.4"	- 86.9"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.1"	12.8"	0.0"	- 24.0"	- 61.2"
TRAJ: 500 yd. zero	- 1.5"	15.7"	25.7"	27.3"	19.3"	0.0"	- 32.4"
TRAJ: 600 yd. zero	- 1.5"	21.1"	36.6"	43.5"	40.9"	27.0"	0.0"
VELOCITY (fps)	2300	2137	1983	1837	1700	1572	1445
ENERGY (ft. lbs.)	1974	1705	1468	1259	1078	923	779
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.2"	- 21.7"	- 47.9"	- 86.6"	- 138.8"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 12.4"	- 35.4"	- 71.0"	- 120.1"
TRAJ: 300 yd. zero	- 1.5"	7.3"	8.3"	0.0"	- 18.8"	- 50.3"	- 95.2"
TRAJ: 400 yd. zero	- 1.5"	12.0"	17.7"	14.2"	0.0"	- 26.7"	- 66.9"
TRAJ: 500 yd. zero	- 1.5"	17.3"	28.4"	30.2"	21.4"	0.0"	- 34.8"
TRAJ: 600 yd. zero	- 1.5"	23.1"	40.1"	47.6"	44.6"	29.1"	0.0"
VELOCITY (fps)	2200	2043	1893	1752	1621	1490	1369
ENERGY (ft. lbs.)	1806	1557	1337	1145	980	828	699
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.9"	- 24.1"	- 53.3"	- 95.6"	- 154.1"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 13.7"	- 39.4"	- 78.2"	- 133.3"
TRAJ: 300 yd. zero	- 1.5"	8.1"	9.2"	0.0"	- 21.1"	- 55.3"	- 105.7"
TRAJ: 400 yd. zero	- 1.5"	13.3"	19.7"	15.8"	0.0"	- 28.9"	- 74.1"
TRAJ: 500 yd. zero	- 1.5"	19.1"	31.3"	33.2"	23.1"	0.0"	- 39.4"
TRAJ: 600 yd. zero	- 1.5"	25.7"	44.4"	52.9"	49.4"	32.8"	0.0"

**30 CALIBER (.308" Dia.) 170 GRAIN FLAT POINT**

SECTIONAL DENSITY: .256 BALLISTIC COEFFICIENT: .182

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2700	2450	2216	1999	1797	1613	1439
ENERGY (ft. lbs.)	2753	2266	1855	1509	1219	983	782
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 1.7"	- 5.8"	- 12.5"	- 22.5"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.8"	- 5.8"	- 12.6"	- 22.6"
TRAJ: 150 yd. zero	- 1.5"	.6"	1.2"	0.0"	- 3.4"	- 9.5"	- 19.0"
TRAJ: 200 yd. zero	- 1.5"	1.5"	2.9"	2.6"	0.0"	- 5.2"	- 13.8"
TRAJ: 250 yd. zero	- 1.5"	2.5"	5.0"	5.8"	4.2"	0.0"	- 7.5"
TRAJ: 300 yd. zero	- 1.5"	3.8"	7.6"	9.5"	9.3"	6.3"	0.0"
VELOCITY (fps)	2600	2356	2129	1918	1723	1547	1379
ENERGY (ft. lbs.)	2552	2096	1712	1389	1120	903	718
TRAJ: 50 yd. zero	- 1.5"	0.0"	-.1"	- 2.2"	- 6.7"	- 14.3"	- 25.6"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.0"	- 6.5"	- 14.1"	- 25.3"
TRAJ: 150 yd. zero	- 1.5"	.7"	1.4"	0.0"	- 3.8"	- 10.7"	- 21.2"
TRAJ: 200 yd. zero	- 1.5"	1.7"	3.3"	2.9"	0.0"	- 5.9"	- 15.4"
TRAJ: 250 yd. zero	- 1.5"	2.9"	5.6"	6.4"	4.7"	0.0"	- 8.3"
TRAJ: 300 yd. zero	- 1.5"	4.3"	8.4"	10.6"	10.3"	7.0"	0.0"
VELOCITY (fps)	2500	2263	2042	1837	1650	1471	1313
ENERGY (ft. lbs.)	2360	1934	1575	1275	1027	817	651
TRAJ: 50 yd. zero	- 1.5"	0.0"	-.2"	- 2.7"	- 7.7"	- 16.0"	- 28.4"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.3"	- 7.2"	- 15.3"	- 27.8"
TRAJ: 150 yd. zero	- 1.5"	.9"	1.5"	0.0"	- 4.1"	- 11.5"	- 23.0"
TRAJ: 200 yd. zero	- 1.5"	1.9"	3.6"	3.1"	0.0"	- 8.3"	- 16.8"
TRAJ: 250 yd. zero	- 1.5"	3.2"	6.2"	6.9"	5.1"	0.0"	- 9.2"
TRAJ: 300 yd. zero	- 1.5"	4.7"	9.2"	11.5"	11.2"	7.7"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2400	2170	1956	1757	1578	1407	1259
ENERGY (ft. lbs.)	2175	1778	1444	1166	940	747	599
TRAJ: 50 yd. zero	-1.5"	0.0"	-.3"	-3.0"	-8.5"	-17.7"	-31.3"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.5"	-7.8"	-16.7"	-30.2"
TRAJ: 150 yd. zero	-1.5"	1.0"	1.7"	0.0"	-4.4"	-12.5"	-25.2"
TRAJ: 200 yd. zero	-1.5"	2.1"	3.9"	3.4"	0.0"	-6.9"	-18.4"
TRAJ: 250 yd. zero	-1.5"	3.5"	6.7"	7.6"	5.8"	0.0"	-10.1"
TRAJ: 300 yd. zero	-1.5"	5.2"	10.1"	12.6"	12.3"	8.4"	0.0"
VELOCITY (fps)	2300	2077	1869	1678	1497	1335	1201
ENERGY (ft. lbs.)	1997	1628	1319	1064	846	673	545
TRAJ: 50 yd. zero	-1.5"	0.0"	-.5"	-3.7"	-9.9"	-20.1"	-35.2"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.8"	-8.8"	-18.7"	-33.5"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.9"	0.0"	-5.0"	-13.9"	-27.7"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.4"	3.8"	0.0"	-7.6"	-20.2"
TRAJ: 250 yd. zero	-1.5"	4.0"	7.5"	8.4"	6.2"	0.0"	-11.0"
TRAJ: 300 yd. zero	-1.5"	5.9"	11.2"	13.9"	13.5"	9.2"	0.0"
VELOCITY (fps)	2200	1984	1783	1601	1427	1276	1157
ENERGY (ft. lbs.)	1827	1486	1200	967	769	615	505
TRAJ: 50 yd. zero	-1.5"	0.0"	-.8"	-4.4"	-11.4"	-22.8"	-39.4"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.2"	-9.8"	-20.8"	-37.0"
TRAJ: 150 yd. zero	-1.5"	1.5"	2.1"	0.0"	-5.5"	-15.5"	-30.6"
TRAJ: 200 yd. zero	-1.5"	2.9"	4.9"	4.2"	0.0"	-8.5"	-22.2"
TRAJ: 250 yd. zero	-1.5"	4.6"	8.3"	9.3"	6.8"	0.0"	-12.0"
TRAJ: 300 yd. zero	-1.5"	6.6"	12.4"	15.3"	14.8"	10.0"	0.0"
VELOCITY (fps)	2100	1891	1698	1524	1359	1220	1111
ENERGY (ft. lbs.)	1665	1350	1088	877	698	562	466
TRAJ: 50 yd. zero	-1.5"	0.0"	-.9"	-5.0"	-13.0"	-25.6"	-44.0"
TRAJ: 100 yd. zero	-1.5"	.5"	0.0"	-3.5"	-11.0"	-23.1"	-41.0"
TRAJ: 150 yd. zero	-1.5"	1.7"	2.4"	0.0"	-6.2"	-17.2"	-33.9"
TRAJ: 200 yd. zero	-1.5"	3.3"	5.5"	4.7"	0.0"	-9.3"	-24.5"
TRAJ: 250 yd. zero	-1.5"	5.1"	9.3"	10.3"	7.5"	0.0"	-13.2"
TRAJ: 300 yd. zero	-1.5"	7.3"	13.7"	17.0"	16.3"	11.0"	0.0"
VELOCITY (fps)	2000	1798	1614	1439	1286	1164	1070
ENERGY (ft. lbs.)	1510	1221	984	782	625	512	432
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.2"	-5.8"	-14.8"	-28.8"	-49.2"
TRAJ: 100 yd. zero	-1.5"	.6"	0.0"	-3.9"	-12.3"	-25.7"	-45.5"
TRAJ: 150 yd. zero	-1.5"	1.9"	2.7"	0.0"	-7.0"	-19.1"	-37.5"
TRAJ: 200 yd. zero	-1.5"	3.7"	6.2"	5.3"	0.0"	-10.3"	-27.0"
TRAJ: 250 yd. zero	-1.5"	5.8"	10.3"	11.5"	8.3"	0.0"	-14.5"
TRAJ: 300 yd. zero	-1.5"	8.2"	15.2"	18.8"	18.0"	12.1"	0.0"
VELOCITY (fps)	1900	1706	1532	1366	1226	1115	1033
ENERGY (ft. lbs.)	1363	1099	886	704	567	470	403
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.5"	-6.8"	-17.0"	-32.8"	-54.9"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.5"	-13.9"	-29.0"	-50.4"
TRAJ: 150 yd. zero	-1.5"	2.3"	3.1"	0.0"	-7.8"	-21.3"	-41.2"
TRAJ: 200 yd. zero	-1.5"	4.3"	7.0"	5.9"	0.0"	-11.5"	-29.4"
TRAJ: 250 yd. zero	-1.5"	6.6"	11.6"	12.8"	9.2"	0.0"	-15.6"
TRAJ: 300 yd. zero	-1.5"	9.2"	16.8"	20.6"	19.6"	13.0"	0.0"
VELOCITY (fps)	1800	1616	1441	1288	1165	1071	998
ENERGY (ft. lbs.)	1223	986	784	626	513	433	376
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.8"	-8.0"	-19.3"	-36.9"	-61.6"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-5.2"	-15.6"	-32.3"	-56.0"
TRAJ: 150 yd. zero	-1.5"	2.7"	3.5"	0.0"	-8.6"	-23.5"	-45.5"
TRAJ: 200 yd. zero	-1.5"	4.8"	7.8"	6.5"	0.0"	-12.7"	-32.5"
TRAJ: 250 yd. zero	-1.5"	7.4"	12.9"	14.1"	10.2"	0.0"	-17.2"
TRAJ: 300 yd. zero	-1.5"	10.3"	18.7"	22.8"	21.7"	14.4"	0.0"

# 30 CALIBER (.308" Dia.) 180 GRAIN SPIRE POINT

SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .431

## BALLISTICS TABLES

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2966	2741	2527	2324	2133	1953
ENERGY (ft. lbs.)	4094	3516	3004	2552	2159	1819	1525
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.4"	- 9.6"	- 22.4"	- 41.9"	- 68.9"
TRAJ: 200 yd. zero	- 1.5"	1.2"	0.0"	- 5.9"	- 17.4"	- 35.7"	- 61.4"
TRAJ: 300 yd. zero	- 1.5"	3.2"	3.9"	0.0"	- 9.5"	- 25.9"	- 49.6"
TRAJ: 400 yd. zero	- 1.5"	5.6"	8.7"	7.2"	0.0"	- 13.9"	- 35.2"
TRAJ: 500 yd. zero	- 1.5"	8.4"	14.3"	15.5"	11.2"	0.0"	- 18.5"
TRAJ: 600 yd. zero	- 1.5"	11.5"	20.5"	24.8"	23.5"	15.4"	0.0"
VELOCITY (fps)	3100	2870	2649	2440	2242	2056	1881
ENERGY (ft. lbs.)	3842	3293	2806	2380	2010	1690	1414
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.8"	- 10.6"	- 24.5"	- 45.6"	- 75.5"
TRAJ: 200 yd. zero	- 1.5"	1.4"	0.0"	- 6.3"	- 18.8"	- 38.4"	- 66.9"
TRAJ: 300 yd. zero	- 1.5"	3.8"	4.3"	0.0"	- 10.2"	- 27.8"	- 54.1"
TRAJ: 400 yd. zero	- 1.5"	6.1"	9.4"	7.7"	0.0"	- 14.9"	- 38.6"
TRAJ: 500 yd. zero	- 1.5"	9.1"	15.4"	16.7"	12.0"	0.0"	- 20.7"
TRAJ: 600 yd. zero	- 1.5"	12.8"	22.3"	27.1"	25.8"	17.3"	0.0"
VELOCITY (fps)	3000	2774	2558	2353	2161	1979	1809
ENERGY (ft. lbs.)	3598	3076	2616	2214	1867	1566	1308
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.1"	- 11.6"	- 26.6"	- 49.4"	- 81.5"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 6.9"	- 20.3"	- 41.5"	- 72.0"
TRAJ: 300 yd. zero	- 1.5"	3.9"	4.6"	0.0"	- 11.0"	- 29.9"	- 58.2"
TRAJ: 400 yd. zero	- 1.5"	6.7"	10.2"	8.3"	0.0"	- 16.1"	- 41.6"
TRAJ: 500 yd. zero	- 1.5"	9.9"	16.6"	18.0"	12.9"	0.0"	- 22.2"
TRAJ: 600 yd. zero	- 1.5"	13.6"	24.0"	29.1"	27.8"	18.6"	0.0"
VELOCITY (fps)	2900	2678	2467	2268	2080	1904	1738
ENERGY (ft. lbs.)	3362	2868	2433	2056	1730	1449	1208
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.5"	- 12.7"	- 28.9"	- 53.6"	- 88.4"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.4"	- 21.9"	- 44.8"	- 77.9"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.0"	0.0"	- 11.9"	- 32.3"	- 62.9"
TRAJ: 400 yd. zero	- 1.5"	7.2"	11.0"	9.0"	0.0"	- 17.3"	- 44.9"
TRAJ: 500 yd. zero	- 1.5"	10.7"	17.9"	19.4"	13.9"	0.0"	- 24.1"
TRAJ: 600 yd. zero	- 1.5"	14.7"	26.0"	31.5"	30.0"	20.1"	0.0"
VELOCITY (fps)	2800	2583	2377	2183	2000	1828	1669
ENERGY (ft. lbs.)	3134	2667	2258	1905	1599	1337	1114
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 13.9"	- 31.6"	- 58.3"	- 95.2"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.1"	- 23.8"	- 48.5"	- 83.5"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.4"	0.0"	- 12.9"	- 35.0"	- 67.2"
TRAJ: 400 yd. zero	- 1.5"	7.9"	11.9"	9.7"	0.0"	- 18.8"	- 47.7"
TRAJ: 500 yd. zero	- 1.5"	11.7"	19.4"	21.0"	15.0"	0.0"	- 25.2"
TRAJ: 600 yd. zero	- 1.5"	15.9"	27.8"	33.6"	31.9"	21.0"	0.0"
VELOCITY (fps)	2700	2488	2287	2098	1921	1754	1602
ENERGY (ft. lbs.)	2914	2474	2091	1760	1475	1230	1025
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 15.3"	- 34.5"	- 63.6"	- 104.1"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 8.8"	- 25.8"	- 52.8"	- 91.1"
TRAJ: 300 yd. zero	- 1.5"	5.1"	5.9"	0.0"	- 14.0"	- 38.0"	- 73.4"
TRAJ: 400 yd. zero	- 1.5"	8.6"	12.9"	10.6"	0.0"	- 20.4"	- 52.2"
TRAJ: 500 yd. zero	- 1.5"	12.7"	21.1"	22.8"	16.4"	0.0"	- 27.7"
TRAJ: 600 yd. zero	- 1.5"	17.4"	30.4"	36.7"	34.9"	23.1"	0.0"
VELOCITY (fps)	2600	2393	2198	2015	1842	1682	1535
ENERGY (ft. lbs.)	2703	2290	1932	1623	1357	1131	942
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 16.9"	- 37.9"	- 69.8"	- 114.4"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.6"	- 28.2"	- 57.7"	- 99.8"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.5"	0.0"	- 15.3"	- 41.6"	- 80.5"
TRAJ: 400 yd. zero	- 1.5"	9.5"	14.1"	11.5"	0.0"	- 22.4"	- 57.5"
TRAJ: 500 yd. zero	- 1.5"	14.0"	23.1"	25.0"	18.0"	0.0"	- 30.5"
TRAJ: 600 yd. zero	- 1.5"	19.1"	33.3"	40.3"	38.4"	25.5"	0.0"
VELOCITY (fps)	2500	2299	2109	1931	1764	1610	1480
ENERGY (ft. lbs.)	2499	2113	1779	1491	1244	1037	853
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 18.3"	- 41.1"	- 75.2"	- 122.5"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 10.5"	- 30.8"	- 62.3"	- 107.0"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.1"	0.0"	- 16.7"	- 44.7"	- 85.8"
TRAJ: 400 yd. zero	- 1.5"	10.3"	15.4"	12.6"	0.0"	- 23.7"	- 60.7"
TRAJ: 500 yd. zero	- 1.5"	15.1"	25.0"	26.8"	19.0"	0.0"	- 32.2"
TRAJ: 600 yd. zero	- 1.5"	20.4"	35.7"	42.9"	40.5"	26.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2205	2021	1848	1687	1540	1397
ENERGY (ft. lbs.)	2303	1943	1632	1365	1138	948	780
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.7"	- 20.3"	- 45.6"	- 83.5"	- 136.0"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 11.6"	- 34.1"	- 69.1"	- 118.7"
TRAJ: 300 yd. zero	- 1.5"	6.8"	7.8"	0.0"	- 18.5"	- 49.6"	- 95.4"
TRAJ: 400 yd. zero	- 1.5"	11.4"	17.1"	13.9"	0.0"	- 26.4"	- 67.5"
TRAJ: 500 yd. zero	- 1.5"	16.7"	27.6"	29.8"	21.2"	0.0"	- 35.7"
TRAJ: 600 yd. zero	- 1.5"	22.7"	39.6"	47.7"	45.0"	29.8"	0.0"
VELOCITY (fps)	2300	2110	1932	1765	1611	1461	1326
ENERGY (ft. lbs.)	2115	1781	1492	1245	1038	854	702
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.4"	- 22.6"	- 49.9"	- 91.3"	- 149.4"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 12.8"	- 37.0"	- 75.1"	- 130.0"
TRAJ: 300 yd. zero	- 1.5"	7.5"	8.6"	0.0"	- 19.8"	- 53.6"	- 104.2"
TRAJ: 400 yd. zero	- 1.5"	12.5"	18.5"	14.9"	0.0"	- 28.8"	- 74.4"
TRAJ: 500 yd. zero	- 1.5"	18.3"	30.1"	32.2"	23.1"	0.0"	- 39.8"
TRAJ: 600 yd. zero	- 1.5"	24.9"	43.3"	52.1"	49.6"	33.2"	0.0"
VELOCITY (fps)	2200	2016	1844	1683	1537	1393	1267
ENERGY (ft. lbs.)	1935	1625	1359	1133	944	776	642
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.2"	- 25.4"	- 56.2"	- 101.9"	- 165.8"
TRAJ: 200 yd. zero	- 1.5"	3.8"	0.0"	- 14.4"	- 41.6"	- 83.6"	- 143.9"
TRAJ: 300 yd. zero	- 1.5"	8.5"	9.7"	0.0"	- 22.3"	- 59.5"	- 115.0"
TRAJ: 400 yd. zero	- 1.5"	14.1"	20.8"	16.8"	0.0"	- 31.6"	- 81.4"
TRAJ: 500 yd. zero	- 1.5"	20.4"	33.5"	35.7"	25.3"	0.0"	- 43.5"
TRAJ: 600 yd. zero	- 1.5"	27.6"	48.0"	57.5"	54.3"	36.3"	0.0"
VELOCITY (fps)	2100	1922	1756	1603	1454	1319	1205
ENERGY (ft. lbs.)	1763	1477	1232	1027	845	695	581
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.2"	- 28.1"	- 61.5"	- 111.5"	- 182.1"
TRAJ: 200 yd. zero	- 1.5"	4.1"	0.0"	- 15.6"	- 44.9"	- 90.8"	- 157.2"
TRAJ: 300 yd. zero	- 1.5"	9.4"	10.5"	0.0"	- 24.0"	- 64.7"	- 125.8"
TRAJ: 400 yd. zero	- 1.5"	15.4"	22.5"	18.0"	0.0"	- 34.6"	- 89.7"
TRAJ: 500 yd. zero	- 1.5"	22.3"	36.3"	38.8"	27.7"	0.0"	- 48.2"
TRAJ: 600 yd. zero	- 1.5"	30.4"	52.4"	62.9"	59.9"	40.2"	0.0"
VELOCITY (fps)	2000	1828	1669	1514	1373	1250	1151
ENERGY (ft. lbs.)	1599	1336	1114	916	753	624	530
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.0"	- 31.0"	- 68.5"	- 125.2"	- 204.1"
TRAJ: 200 yd. zero	- 1.5"	4.5"	0.0"	- 17.4"	- 50.3"	- 102.5"	- 176.9"
TRAJ: 300 yd. zero	- 1.5"	10.4"	11.6"	0.0"	- 27.0"	- 73.4"	- 142.0"
TRAJ: 400 yd. zero	- 1.5"	17.1"	25.2"	20.3"	0.0"	- 39.6"	- 101.3"
TRAJ: 500 yd. zero	- 1.5"	25.1"	41.0"	44.1"	31.7"	0.0"	- 53.8"
TRAJ: 600 yd. zero	- 1.5"	34.0"	59.0"	71.0"	67.6"	44.9"	0.0"
VELOCITY (fps)	1900	1735	1584	1436	1304	1193	1103
ENERGY (ft. lbs.)	1443	1204	1003	825	680	569	487
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 10.5"	- 35.4"	- 77.0"	- 140.0"	- 225.6"
TRAJ: 200 yd. zero	- 1.5"	5.3"	0.0"	- 19.5"	- 55.8"	- 113.5"	- 193.9"
TRAJ: 300 yd. zero	- 1.5"	11.8"	13.1"	0.0"	- 29.7"	- 80.9"	- 154.7"
TRAJ: 400 yd. zero	- 1.5"	19.3"	27.9"	22.3"	0.0"	- 43.7"	- 110.0"
TRAJ: 500 yd. zero	- 1.5"	28.0"	45.4"	48.6"	35.0"	0.0"	- 57.6"
TRAJ: 600 yd. zero	- 1.5"	37.6"	64.6"	77.4"	73.4"	48.0"	0.0"

**30 CALIBER (.308" Dia.) 180 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .239

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2785	2402	2058	1750	1475	1249
ENERGY (ft. lbs.)	4094	3100	2307	1693	1225	870	624
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 12.2"	- 29.8"	- 58.7"	- 103.6"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 7.6"	- 23.7"	- 50.9"	- 94.3"
TRAJ: 300 yd. zero	- 1.5"	4.1"	5.1"	0.0"	- 13.5"	- 38.2"	- 79.1"
TRAJ: 400 yd. zero	- 1.5"	7.5"	11.9"	10.1"	0.0"	- 21.3"	- 58.8"
TRAJ: 500 yd. zero	- 1.5"	11.7"	20.4"	23.0"	17.1"	0.0"	- 33.2"
TRAJ: 600 yd. zero	- 1.5"	17.3"	31.5"	39.6"	39.2"	27.7"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2692	2318	1983	1684	1420	1208
ENERGY (ft. lbs.)	3842	2897	2149	1572	1134	806	583
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-13.4"	-32.4"	-63.6"	-111.8"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-8.3"	-25.7"	-55.2"	-101.6"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.6"	0.0"	-14.5"	-41.2"	-84.8"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.9"	10.9"	0.0"	-23.0"	-63.1"
TRAJ: 500 yd. zero	-1.5"	12.7"	22.1"	24.7"	18.5"	0.0"	-35.4"
TRAJ: 600 yd. zero	-1.5"	18.6"	33.9"	42.4"	42.1"	29.5"	0.0"
VELOCITY (fps)	3000	2600	2235	1908	1620	1365	1170
ENERGY (ft. lbs.)	3598	2702	1997	1456	1049	745	547
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-14.6"	-35.1"	-68.9"	-121.4"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-9.0"	-27.7"	-59.5"	-110.2"
TRAJ: 300 yd. zero	-1.5"	4.9"	6.0"	0.0"	-15.6"	-44.5"	-92.2"
TRAJ: 400 yd. zero	-1.5"	8.8"	13.9"	11.8"	0.0"	-24.9"	-68.6"
TRAJ: 500 yd. zero	-1.5"	13.8"	23.8"	26.7"	20.0"	0.0"	-38.7"
TRAJ: 600 yd. zero	-1.5"	20.2"	36.8"	46.1"	45.8"	32.3"	0.0"
VELOCITY (fps)	2900	2508	2153	1834	1557	1313	1136
ENERGY (ft. lbs.)	3362	2514	1852	1345	969	690	516
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.2"	-16.0"	-38.4"	-75.3"	-131.1"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.7"	-30.0"	-64.7"	-118.5"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.5"	0.0"	-17.0"	-48.5"	-99.0"
TRAJ: 400 yd. zero	-1.5"	9.6"	15.0"	12.8"	0.0"	-27.2"	-73.4"
TRAJ: 500 yd. zero	-1.5"	15.1"	25.9"	29.1"	21.8"	0.0"	-40.7"
TRAJ: 600 yd. zero	-1.5"	21.9"	39.5"	49.5"	49.0"	34.0"	0.0"
VELOCITY (fps)	2800	2416	2071	1762	1485	1257	1095
ENERGY (ft. lbs.)	3134	2334	1714	1241	881	631	480
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-17.4"	-41.6"	-81.8"	-142.1"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-10.5"	-32.3"	-70.1"	-128.2"
TRAJ: 300 yd. zero	-1.5"	5.8"	7.0"	0.0"	-18.3"	-52.6"	-107.2"
TRAJ: 400 yd. zero	-1.5"	10.4"	16.2"	13.7"	0.0"	-29.7"	-79.7"
TRAJ: 500 yd. zero	-1.5"	16.4"	28.1"	31.6"	23.8"	0.0"	-44.0"
TRAJ: 600 yd. zero	-1.5"	23.7"	42.7"	53.6"	53.1"	36.7"	0.0"
VELOCITY (fps)	2700	2326	1989	1690	1425	1211	1067
ENERGY (ft. lbs.)	2914	2162	1582	1142	811	586	455
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-19.1"	-45.5"	-89.1"	-154.7"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-11.4"	-35.3"	-76.3"	-139.3"
TRAJ: 300 yd. zero	-1.5"	6.4"	7.6"	0.0"	-20.0"	-57.2"	-116.5"
TRAJ: 400 yd. zero	-1.5"	11.4"	17.7"	15.0"	0.0"	-32.2"	-86.4"
TRAJ: 500 yd. zero	-1.5"	17.8"	30.5"	34.4"	25.8"	0.0"	-47.7"
TRAJ: 600 yd. zero	-1.5"	25.8"	46.5"	58.3"	57.6"	39.8"	0.0"
VELOCITY (fps)	2600	2236	1909	1620	1365	1170	1041
ENERGY (ft. lbs.)	2703	1998	1456	1049	745	547	433
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.6"	-21.0"	-49.6"	-97.1"	-167.4"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.5"	-38.3"	-83.0"	-150.4"
TRAJ: 300 yd. zero	-1.5"	7.0"	8.4"	0.0"	-21.6"	-62.1"	-125.4"
TRAJ: 400 yd. zero	-1.5"	12.4"	19.2"	16.2"	0.0"	-35.1"	-92.9"
TRAJ: 500 yd. zero	-1.5"	19.4"	33.2"	37.3"	28.1"	0.0"	-50.8"
TRAJ: 600 yd. zero	-1.5"	27.9"	50.2"	62.7"	62.0"	42.4"	0.0"
VELOCITY (fps)	2500	2148	1828	1551	1309	1133	1016
ENERGY (ft. lbs.)	2499	1841	1336	962	685	513	413
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.2"	-23.2"	-54.5"	-106.0"	-181.3"
TRAJ: 200 yd. zero	-1.5"	3.1"	0.0"	-13.8"	-42.0"	-90.4"	-162.5"
TRAJ: 300 yd. zero	-1.5"	7.7"	9.2"	0.0"	-23.6"	-67.3"	-134.8"
TRAJ: 400 yd. zero	-1.5"	13.6"	21.0"	17.7"	0.0"	-37.8"	-99.4"
TRAJ: 500 yd. zero	-1.5"	21.2"	36.2"	40.4"	30.3"	0.0"	-54.0"
TRAJ: 600 yd. zero	-1.5"	30.2"	54.2"	67.4"	66.3"	45.0"	0.0"
VELOCITY (fps)	2400	2058	1749	1474	1248	1090	986
ENERGY (ft. lbs.)	2303	1690	1222	868	623	475	389
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.9"	-25.3"	-60.1"	-116.0"	-198.0"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-14.9"	-48.2"	-98.6"	-177.2"
TRAJ: 300 yd. zero	-1.5"	8.5"	10.0"	0.0"	-26.3"	-73.7"	-147.3"
TRAJ: 400 yd. zero	-1.5"	15.0"	23.1"	19.7"	0.0"	-40.8"	-107.8"
TRAJ: 500 yd. zero	-1.5"	23.2"	39.5"	44.3"	32.7"	0.0"	-58.8"
TRAJ: 600 yd. zero	-1.5"	33.0"	59.1"	73.7"	71.9"	49.0"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	1986	1670	1408	1199	1059	964
ENERGY (ft. lbs.)	2115	1546	1115	792	575	449	372
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.8"	- 28.1"	- 66.2"	- 126.7"	- 214.6"
TRAJ: 200 yd. zero	- 1.5"	3.9"	0.0"	- 16.4"	- 50.6"	- 107.2"	- 191.2"
TRAJ: 300 yd. zero	- 1.5"	9.4"	10.9"	0.0"	- 28.7"	- 79.9"	- 158.4"
TRAJ: 400 yd. zero	- 1.5"	16.8"	25.3"	21.8"	0.0"	- 43.9"	- 115.3"
TRAJ: 500 yd. zero	- 1.5"	25.4"	42.9"	47.9"	35.2"	0.0"	- 62.5"
TRAJ: 600 yd. zero	- 1.5"	35.8"	63.8"	79.2"	76.9"	52.1"	0.0"
VELOCITY (fps)	2200	1877	1593	1343	1155	1031	942
ENERGY (ft. lbs.)	1935	1408	1014	721	533	425	355
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.5"	- 30.9"	- 73.0"	- 138.9"	- 232.3"
TRAJ: 200 yd. zero	- 1.5"	4.3"	0.0"	- 18.1"	- 55.8"	- 117.5"	- 206.6"
TRAJ: 300 yd. zero	- 1.5"	10.3"	12.1"	0.0"	- 31.7"	- 87.3"	- 170.4"
TRAJ: 400 yd. zero	- 1.5"	18.3"	27.9"	23.8"	0.0"	- 47.6"	- 122.8"
TRAJ: 500 yd. zero	- 1.5"	27.8"	47.0"	52.4"	38.1"	0.0"	- 65.6"
TRAJ: 600 yd. zero	- 1.5"	38.7"	68.9"	85.2"	81.9"	54.7"	0.0"
VELOCITY (fps)	2100	1788	1507	1274	1106	997	912
ENERGY (ft. lbs.)	1763	1277	908	649	489	398	333
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.8"	- 34.9"	- 81.2"	- 152.7"	- 254.6"
TRAJ: 200 yd. zero	- 1.5"	4.8"	0.0"	- 20.5"	- 61.9"	- 128.5"	- 225.7"
TRAJ: 300 yd. zero	- 1.5"	11.7"	13.7"	0.0"	- 34.5"	- 94.3"	- 184.6"
TRAJ: 400 yd. zero	- 1.5"	20.3"	31.0"	25.9"	0.0"	- 51.1"	- 132.8"
TRAJ: 500 yd. zero	- 1.5"	30.5"	51.4"	56.6"	41.0"	0.0"	- 71.4"
TRAJ: 600 yd. zero	- 1.5"	42.4"	75.2"	92.3"	88.6"	59.5"	0.0"
VELOCITY (fps)	2000	1699	1432	1217	1071	972	891
ENERGY (ft. lbs.)	1599	1155	820	592	458	378	317
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 10.7"	- 38.8"	- 89.2"	- 166.6"	- 275.2"
TRAJ: 200 yd. zero	- 1.5"	5.4"	0.0"	- 22.7"	- 67.6"	- 139.7"	- 242.9"
TRAJ: 300 yd. zero	- 1.5"	13.0"	15.2"	0.0"	- 37.3"	- 101.8"	- 197.4"
TRAJ: 400 yd. zero	- 1.5"	22.3"	33.8"	28.0"	0.0"	- 55.1"	- 141.4"
TRAJ: 500 yd. zero	- 1.5"	33.3"	55.9"	61.1"	44.1"	0.0"	- 75.2"
TRAJ: 600 yd. zero	- 1.5"	45.9"	81.0"	98.7"	94.3"	62.7"	0.0"
VELOCITY (fps)	1900	1613	1359	1166	1038	948	870
ENERGY (ft. lbs.)	1443	1040	739	544	431	359	302
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 12.2"	- 43.5"	- 99.2"	- 184.2"	- 301.5"
TRAJ: 200 yd. zero	- 1.5"	6.1"	0.0"	- 25.2"	- 74.7"	- 153.8"	- 264.8"
TRAJ: 300 yd. zero	- 1.5"	14.5"	16.8"	0.0"	- 41.1"	- 111.6"	- 214.3"
TRAJ: 400 yd. zero	- 1.5"	24.8"	37.4"	30.8"	0.0"	- 60.2"	- 152.7"
TRAJ: 500 yd. zero	- 1.5"	36.8"	61.5"	67.0"	48.2"	0.0"	- 80.4"
TRAJ: 600 yd. zero	- 1.5"	50.3"	88.3"	107.2"	101.8"	67.0"	0.0"

**30 CALIBER (.308" Dia.) 190 GRAIN BOAT TAIL HOLLOW**

SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .552

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2919	2745	2576	2415	2261	2113
ENERGY (ft. lbs.)	4055	3597	3179	2801	2461	2156	1885
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 2.6"	- 9.9"	- 22.7"	- 41.4"	- 67.4"
TRAJ: 200 yd. zero	- 1.5"	1.3"	0.0"	- 6.0"	- 17.5"	- 34.9"	- 59.5"
TRAJ: 300 yd. zero	- 1.5"	3.3"	4.0"	0.0"	- 9.5"	- 24.9"	- 47.5"
TRAJ: 400 yd. zero	- 1.5"	5.7"	8.8"	7.1"	0.0"	- 13.0"	- 33.2"
TRAJ: 500 yd. zero	- 1.5"	8.3"	14.0"	15.0"	10.4"	0.0"	- 17.6"
TRAJ: 600 yd. zero	- 1.5"	11.2"	19.9"	23.8"	22.2"	14.7"	0.0"
VELOCITY (fps)	3000	2823	2651	2487	2329	2179	2035
ENERGY (ft. lbs.)	3798	3362	2967	2609	2289	2003	1748
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.0"	- 10.9"	- 24.7"	- 45.4"	- 73.3"
TRAJ: 200 yd. zero	- 1.5"	1.5"	0.0"	- 6.4"	- 18.7"	- 37.9"	- 64.3"
TRAJ: 300 yd. zero	- 1.5"	3.7"	4.3"	0.0"	- 10.1"	- 27.2"	- 51.4"
TRAJ: 400 yd. zero	- 1.5"	6.2"	9.4"	7.6"	0.0"	- 14.5"	- 36.1"
TRAJ: 500 yd. zero	- 1.5"	9.1"	15.2"	16.3"	11.6"	0.0"	- 18.7"
TRAJ: 600 yd. zero	- 1.5"	12.2"	21.4"	25.7"	24.1"	15.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2726	2558	2397	2244	2098	1958
ENERGY (ft. lbs.)	3549	3136	2762	2426	2125	1857	1618
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 12.1"	- 27.1"	- 49.3"	- 79.2"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.2"	- 20.5"	- 41.1"	- 69.4"
TRAJ: 300 yd. zero	- 1.5"	4.1"	4.8"	0.0"	- 10.8"	- 29.0"	- 54.9"
TRAJ: 400 yd. zero	- 1.5"	6.8"	10.3"	8.2"	0.0"	- 15.5"	- 38.6"
TRAJ: 500 yd. zero	- 1.5"	9.9"	16.5"	17.5"	12.4"	0.0"	- 20.0"
TRAJ: 600 yd. zero	- 1.5"	13.2"	23.1"	27.5"	25.7"	16.7"	0.0"
VELOCITY (fps)	2800	2629	2466	2309	2160	2017	1881
ENERGY (ft. lbs.)	3308	2918	2565	2250	1968	1717	1494
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 13.2"	- 29.2"	- 53.1"	- 86.2"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 7.7"	- 22.0"	- 44.1"	- 75.4"
TRAJ: 300 yd. zero	- 1.5"	4.4"	5.2"	0.0"	- 11.6"	- 31.1"	- 59.8"
TRAJ: 400 yd. zero	- 1.5"	7.3"	11.0"	8.7"	0.0"	- 16.5"	- 42.3"
TRAJ: 500 yd. zero	- 1.5"	10.6"	17.7"	18.7"	13.3"	0.0"	- 22.4"
TRAJ: 600 yd. zero	- 1.5"	14.4"	25.2"	29.9"	28.3"	18.7"	0.0"
VELOCITY (fps)	2700	2533	2374	2221	2076	1937	1805
ENERGY (ft. lbs.)	3076	2708	2377	2082	1818	1584	1375
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.9"	- 14.3"	- 32.2"	- 58.1"	- 93.8"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 8.4"	- 24.3"	- 48.2"	- 81.9"
TRAJ: 300 yd. zero	- 1.5"	4.8"	5.6"	0.0"	- 13.1"	- 34.2"	- 65.1"
TRAJ: 400 yd. zero	- 1.5"	8.1"	12.2"	9.8"	0.0"	- 17.7"	- 45.4"
TRAJ: 500 yd. zero	- 1.5"	11.6"	19.3"	20.5"	14.2"	0.0"	- 24.1"
TRAJ: 600 yd. zero	- 1.5"	15.6"	27.3"	32.6"	30.3"	20.1"	0.0"
VELOCITY (fps)	2600	2437	2282	2134	1993	1858	1731
ENERGY (ft. lbs.)	2853	2507	2198	1922	1676	1457	1264
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.6"	- 16.0"	- 35.5"	- 63.5"	- 102.3"
TRAJ: 200 yd. zero	- 1.5"	2.3"	0.0"	- 9.0"	- 26.2"	- 51.9"	- 88.3"
TRAJ: 300 yd. zero	- 1.5"	5.3"	6.1"	0.0"	- 14.1"	- 36.8"	- 70.2"
TRAJ: 400 yd. zero	- 1.5"	8.9"	13.1"	10.6"	0.0"	- 19.1"	- 49.0"
TRAJ: 500 yd. zero	- 1.5"	12.7"	20.8"	22.1"	15.3"	0.0"	- 26.0"
TRAJ: 600 yd. zero	- 1.5"	17.1"	29.5"	35.1"	32.7"	21.7"	0.0"
VELOCITY (fps)	2500	2342	2191	2047	1910	1779	1657
ENERGY (ft. lbs.)	2637	2314	2026	1768	1539	1336	1159
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 17.5"	- 38.6"	- 70.0"	- 112.6"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 9.8"	- 28.4"	- 57.2"	- 97.2"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.6"	0.0"	- 15.2"	- 40.8"	- 77.5"
TRAJ: 400 yd. zero	- 1.5"	9.7"	14.2"	11.5"	0.0"	- 21.7"	- 54.6"
TRAJ: 500 yd. zero	- 1.5"	14.0"	22.9"	24.5"	17.4"	0.0"	- 28.5"
TRAJ: 600 yd. zero	- 1.5"	18.8"	32.4"	38.8"	36.4"	23.8"	0.0"
VELOCITY (fps)	2400	2246	2100	1960	1827	1702	1585
ENERGY (ft. lbs.)	2431	2130	1861	1622	1409	1222	1060
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.6"	- 19.1"	- 42.1"	- 76.5"	- 123.1"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 10.6"	- 30.8"	- 62.3"	- 106.1"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.1"	0.0"	- 16.5"	- 44.5"	- 84.7"
TRAJ: 400 yd. zero	- 1.5"	10.5"	15.4"	12.4"	0.0"	- 23.8"	- 59.8"
TRAJ: 500 yd. zero	- 1.5"	15.3"	24.9"	26.7"	19.1"	0.0"	- 31.3"
TRAJ: 600 yd. zero	- 1.5"	20.5"	35.4"	42.4"	39.9"	26.1"	0.0"
VELOCITY (fps)	2300	2151	2009	1874	1745	1625	1504
ENERGY (ft. lbs.)	2232	1952	1703	1481	1285	1115	954
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.2"	- 21.7"	- 47.1"	- 83.7"	- 133.9"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 12.3"	- 34.5"	- 68.0"	- 115.0"
TRAJ: 300 yd. zero	- 1.5"	7.2"	8.2"	0.0"	- 18.1"	- 47.5"	- 90.4"
TRAJ: 400 yd. zero	- 1.5"	11.8"	17.3"	13.6"	0.0"	- 24.8"	- 63.2"
TRAJ: 500 yd. zero	- 1.5"	16.8"	27.2"	28.5"	19.9"	0.0"	- 33.4"
TRAJ: 600 yd. zero	- 1.5"	22.3"	38.4"	45.2"	42.2"	27.9"	0.0"
VELOCITY (fps)	2200	2056	1918	1787	1664	1550	1434
ENERGY (ft. lbs.)	2042	1783	1552	1348	1169	1014	868
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.9"	- 24.0"	- 52.1"	- 92.6"	- 148.2"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 13.5"	- 38.1"	- 75.1"	- 127.3"
TRAJ: 300 yd. zero	- 1.5"	8.0"	9.0"	0.0"	- 20.1"	- 52.6"	- 100.2"
TRAJ: 400 yd. zero	- 1.5"	13.0"	19.1"	15.1"	0.0"	- 27.5"	- 70.1"
TRAJ: 500 yd. zero	- 1.5"	18.5"	30.1"	31.6"	22.0"	0.0"	- 37.0"
TRAJ: 600 yd. zero	- 1.5"	24.7"	42.4"	50.1"	46.7"	30.9"	0.0"



## 30 Caliber (.308" Dia.) 190 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .515

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2907	2720	2541	2370	2207	2052
ENERGY (ft. lbs.)	4055	3565	3123	2724	2370	2055	1777
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.2"	-23.3"	-42.7"	-69.1"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-8.0"	-17.8"	-35.9"	-60.9"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.1"	0.0"	-9.7"	-25.7"	-48.7"
TRAJ: 400 yd. zero	-1.5"	5.8"	8.9"	7.3"	0.0"	-13.5"	-34.1"
TRAJ: 500 yd. zero	-1.5"	8.8"	14.4"	15.5"	10.9"	0.0"	-17.8"
TRAJ: 600 yd. zero	-1.5"	11.5"	20.3"	24.4"	22.8"	14.9"	0.0"
VELOCITY (fps)	3000	2810	2627	2452	2285	2126	1976
ENERGY (ft. lbs.)	3798	3333	2913	2537	2204	1908	1647
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.3"	-25.5"	-46.4"	-75.6"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-8.8"	-19.5"	-38.9"	-66.6"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.5"	0.0"	-10.4"	-27.5"	-53.0"
TRAJ: 400 yd. zero	-1.5"	6.4"	9.8"	7.8"	0.0"	-14.4"	-37.3"
TRAJ: 500 yd. zero	-1.5"	9.3"	15.8"	16.5"	11.6"	0.0"	-19.9"
TRAJ: 600 yd. zero	-1.5"	12.6"	22.2"	26.5"	24.9"	16.6"	0.0"
VELOCITY (fps)	2900	2714	2535	2364	2201	2047	1900
ENERGY (ft. lbs.)	3549	3108	2711	2358	2045	1768	1523
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.2"	-12.2"	-27.5"	-49.9"	-81.3"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.3"	-21.0"	-41.7"	-71.4"
TRAJ: 300 yd. zero	-1.5"	4.1"	4.9"	0.0"	-11.2"	-29.5"	-56.7"
TRAJ: 400 yd. zero	-1.5"	6.9"	10.5"	8.4"	0.0"	-15.5"	-39.9"
TRAJ: 500 yd. zero	-1.5"	10.0"	16.7"	17.7"	12.4"	0.0"	-21.3"
TRAJ: 600 yd. zero	-1.5"	13.6"	23.8"	28.4"	26.6"	17.8"	0.0"
VELOCITY (fps)	2800	2617	2443	2276	2118	1968	1825
ENERGY (ft. lbs.)	3308	2891	2518	2186	1893	1634	1405
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.3"	-29.8"	-54.7"	-88.5"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.9"	-22.6"	-45.6"	-77.7"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.3"	0.0"	-12.0"	-32.4"	-61.8"
TRAJ: 400 yd. zero	-1.5"	7.5"	11.3"	9.0"	0.0"	-17.4"	-43.7"
TRAJ: 500 yd. zero	-1.5"	10.9"	18.3"	19.5"	13.9"	0.0"	-22.8"
TRAJ: 600 yd. zero	-1.5"	14.8"	25.9"	30.9"	29.2"	19.1"	0.0"
VELOCITY (fps)	2700	2521	2351	2189	2035	1889	1751
ENERGY (ft. lbs.)	3076	2683	2333	2023	1748	1506	1294
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.2"	-14.9"	-32.8"	-59.8"	-96.4"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.5"	-24.4"	-49.2"	-83.8"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.7"	0.0"	-12.9"	-34.9"	-66.6"
TRAJ: 400 yd. zero	-1.5"	8.2"	12.2"	9.7"	0.0"	-18.7"	-47.1"
TRAJ: 500 yd. zero	-1.5"	12.0"	19.7"	21.0"	15.0"	0.0"	-24.6"
TRAJ: 600 yd. zero	-1.5"	16.1"	27.9"	33.3"	31.5"	20.6"	0.0"
VELOCITY (fps)	2600	2426	2260	2103	1953	1811	1678
ENERGY (ft. lbs.)	2853	2484	2156	1866	1610	1385	1189
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-16.2"	-35.7"	-64.9"	-104.8"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-9.2"	-26.4"	-53.2"	-90.8"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.2"	0.0"	-14.0"	-37.7"	-72.2"
TRAJ: 400 yd. zero	-1.5"	8.9"	13.2"	10.5"	0.0"	-20.2"	-51.1"
TRAJ: 500 yd. zero	-1.5"	13.0"	21.3"	22.7"	16.2"	0.0"	-26.9"
TRAJ: 600 yd. zero	-1.5"	17.5"	30.3"	36.1"	34.1"	22.4"	0.0"
VELOCITY (fps)	2500	2331	2170	2017	1872	1735	1607
ENERGY (ft. lbs.)	2637	2293	1987	1717	1478	1270	1090
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-17.8"	-39.7"	-71.7"	-115.6"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-10.1"	-29.4"	-58.8"	-100.1"
TRAJ: 300 yd. zero	-1.5"	6.0"	6.7"	0.0"	-15.9"	-41.9"	-79.9"
TRAJ: 400 yd. zero	-1.5"	9.9"	14.7"	12.0"	0.0"	-22.0"	-56.0"
TRAJ: 500 yd. zero	-1.5"	14.3"	23.5"	25.2"	17.6"	0.0"	-29.5"
TRAJ: 600 yd. zero	-1.5"	19.3"	33.4"	40.0"	37.3"	24.6"	0.0"
VELOCITY (fps)	2400	2236	2079	1931	1790	1659	1537
ENERGY (ft. lbs.)	2431	2109	1825	1574	1352	1161	997
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.7"	-19.6"	-43.5"	-78.7"	-127.0"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.0"	-32.0"	-64.3"	-109.8"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.4"	0.0"	-17.3"	-46.0"	-87.7"
TRAJ: 400 yd. zero	-1.5"	10.9"	16.0"	13.0"	0.0"	-24.3"	-61.7"
TRAJ: 500 yd. zero	-1.5"	15.7"	25.8"	27.8"	19.4"	0.0"	-32.5"
TRAJ: 600 yd. zero	-1.5"	21.2"	36.6"	43.9"	41.1"	27.1"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	2141	1989	1845	1710	1584	1458
ENERGY (ft. lbs.)	2232	1934	1670	1437	1234	1059	897
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.3"	-21.6"	-48.0"	-86.9"	-139.4"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-12.0"	-35.2"	-71.0"	-120.2"
TRAJ: 300 yd. zero	-1.5"	7.2"	8.1"	0.0"	-19.1"	-50.8"	-96.0"
TRAJ: 400 yd. zero	-1.5"	12.0"	17.6"	14.4"	0.0"	-26.9"	-67.3"
TRAJ: 500 yd. zero	-1.5"	17.4"	28.4"	30.5"	21.6"	0.0"	-35.0"
TRAJ: 600 yd. zero	-1.5"	23.2"	40.1"	48.0"	44.9"	29.2"	0.0"

### 30 CALIBER (.308" Dia.) 220 GRAIN ROUND NOSE

SECTIONAL DENSITY: .331 BALLISTIC COEFFICIENT: .223

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2390	2024	1700	1416	1194	1049
ENERGY (ft. lbs.)	3831	2792	2002	1413	980	696	538
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-18.1"	-43.6"	-86.7"	-151.6"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.9"	-34.1"	-74.8"	-137.3"
TRAJ: 300 yd. zero	-1.5"	6.0"	7.3"	0.0"	-19.4"	-56.4"	-115.3"
TRAJ: 400 yd. zero	-1.5"	10.9"	17.1"	14.6"	0.0"	-32.1"	-86.1"
TRAJ: 500 yd. zero	-1.5"	17.3"	29.9"	33.9"	25.7"	0.0"	-47.5"
TRAJ: 600 yd. zero	-1.5"	25.3"	45.8"	57.7"	57.4"	39.6"	0.0"
VELOCITY (fps)	2700	2300	1944	1631	1359	1156	1025
ENERGY (ft. lbs.)	3562	2586	1847	1300	902	653	513
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.2"	-19.9"	-47.6"	-94.1"	-163.7"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-12.0"	-37.1"	-80.9"	-147.8"
TRAJ: 300 yd. zero	-1.5"	6.6"	8.0"	0.0"	-21.0"	-60.9"	-123.8"
TRAJ: 400 yd. zero	-1.5"	11.9"	18.6"	15.8"	0.0"	-34.6"	-92.2"
TRAJ: 500 yd. zero	-1.5"	18.8"	32.4"	36.6"	27.7"	0.0"	-50.7"
TRAJ: 600 yd. zero	-1.5"	27.3"	49.3"	61.9"	61.5"	42.3"	0.0"
VELOCITY (fps)	2600	2211	1865	1564	1305	1116	999
ENERGY (ft. lbs.)	3303	2388	1699	1195	832	609	487
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.8"	-22.0"	-52.3"	-102.4"	-176.6"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-13.2"	-40.7"	-87.8"	-159.1"
TRAJ: 300 yd. zero	-1.5"	7.3"	8.9"	0.0"	-23.0"	-65.7"	-132.5"
TRAJ: 400 yd. zero	-1.5"	13.1"	20.4"	17.3"	0.0"	-36.9"	-96.0"
TRAJ: 500 yd. zero	-1.5"	20.5"	35.1"	39.4"	29.6"	0.0"	-53.6"
TRAJ: 600 yd. zero	-1.5"	29.4"	53.0"	66.3"	65.4"	44.7"	0.0"
VELOCITY (fps)	2500	2122	1786	1488	1245	1081	974
ENERGY (ft. lbs.)	3054	2200	1558	1081	758	571	464
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.4"	-24.0"	-57.3"	-111.6"	-192.3"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-14.3"	-44.3"	-95.4"	-172.9"
TRAJ: 300 yd. zero	-1.5"	8.0"	9.6"	0.0"	-25.2"	-71.5"	-144.2"
TRAJ: 400 yd. zero	-1.5"	14.3"	22.2"	18.9"	0.0"	-39.9"	-106.3"
TRAJ: 500 yd. zero	-1.5"	22.3"	38.2"	42.9"	32.0"	0.0"	-58.4"
TRAJ: 600 yd. zero	-1.5"	32.1"	57.6"	72.1"	70.9"	48.7"	0.0"
VELOCITY (fps)	2400	2033	1708	1423	1198	1052	953
ENERGY (ft. lbs.)	2814	2019	1425	989	701	541	444
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.0"	-26.3"	-62.6"	-121.2"	-206.8"
TRAJ: 200 yd. zero	-1.5"	3.5"	0.0"	-15.7"	-48.5"	-103.6"	-185.6"
TRAJ: 300 yd. zero	-1.5"	8.8"	10.5"	0.0"	-27.5"	-77.3"	-154.1"
TRAJ: 400 yd. zero	-1.5"	15.7"	24.3"	20.6"	0.0"	-42.9"	-112.8"
TRAJ: 500 yd. zero	-1.5"	24.2"	41.4"	46.4"	34.3"	0.0"	-61.3"
TRAJ: 600 yd. zero	-1.5"	34.5"	61.9"	77.1"	75.2"	51.1"	0.0"
VELOCITY (fps)	2300	1944	1631	1359	1155	1025	933
ENERGY (ft. lbs.)	2585	1846	1300	902	652	513	425
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.9"	-29.0"	-69.2"	-132.9"	-224.8"
TRAJ: 200 yd. zero	-1.5"	4.0"	0.0"	-17.1"	-53.2"	-113.0"	-200.9"
TRAJ: 300 yd. zero	-1.5"	9.7"	11.4"	0.0"	-30.4"	-84.5"	-166.6"
TRAJ: 400 yd. zero	-1.5"	17.3"	26.6"	22.8"	0.0"	-46.4"	-120.9"
TRAJ: 500 yd. zero	-1.5"	26.6"	45.2"	50.7"	37.2"	0.0"	-65.2"
TRAJ: 600 yd. zero	-1.5"	37.5"	67.0"	83.3"	80.6"	54.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2200	1855	1556	1298	1112	996	907
ENERGY (ft. lbs.)	2365	1681	1183	823	605	485	402
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.7"	-32.3"	-75.9"	-144.5"	-242.5"
TRAJ: 200 yd. zero	-1.5"	4.4"	0.0"	-19.1"	-58.3"	-122.5"	-216.1"
TRAJ: 300 yd. zero	-1.5"	10.8"	12.8"	0.0"	-32.7"	-90.5"	-177.7"
TRAJ: 400 yd. zero	-1.5"	19.0"	29.2"	24.6"	0.0"	-49.5"	-128.5"
TRAJ: 500 yd. zero	-1.5"	28.9"	49.0"	54.3"	39.6"	0.0"	-69.1"
TRAJ: 600 yd. zero	-1.5"	40.4"	72.1"	88.9"	85.7"	57.6"	0.0"
VELOCITY (fps)	2100	1767	1472	1233	1073	969	884
ENERGY (ft. lbs.)	2155	1525	1058	743	563	459	382
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.8"	-36.0"	-83.8"	-158.8"	-265.2"
TRAJ: 200 yd. zero	-1.5"	4.9"	0.0"	-21.3"	-64.1"	-134.2"	-235.8"
TRAJ: 300 yd. zero	-1.5"	12.0"	14.2"	0.0"	-35.7"	-98.7"	-193.2"
TRAJ: 400 yd. zero	-1.5"	21.0"	32.1"	26.8"	0.0"	-54.0"	-139.5"
TRAJ: 500 yd. zero	-1.5"	31.8"	53.7"	59.3"	43.3"	0.0"	-74.7"
TRAJ: 600 yd. zero	-1.5"	44.2"	78.6"	96.6"	93.1"	62.3"	0.0"
VELOCITY (fps)	2000	1679	1399	1182	1042	946	864
ENERGY (ft. lbs.)	1955	1378	956	682	530	437	365
TRAJ: 100 yd. zero	-1.5"	0.0"	-11.1"	-40.1"	-92.9"	-173.8"	-287.1"
TRAJ: 200 yd. zero	-1.5"	5.6"	0.0"	-23.3"	-70.6"	-145.8"	-253.8"
TRAJ: 300 yd. zero	-1.5"	13.4"	15.6"	0.0"	-39.4"	-106.9"	-206.9"
TRAJ: 400 yd. zero	-1.5"	23.2"	35.3"	29.6"	0.0"	-57.6"	-147.7"
TRAJ: 500 yd. zero	-1.5"	34.8"	58.4"	64.2"	46.1"	0.0"	-78.6"
TRAJ: 600 yd. zero	-1.5"	47.9"	84.6"	103.5"	98.5"	65.5"	0.0"

**30 CALIBER (.308" Dia.) 220 GRAIN FULL METAL JACKET**

SECTIONAL DENSITY: .331 BALLISTIC COEFFICIENT: .271

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2460	2149	1867	1615	1388	1204
ENERGY (ft. lbs.)	3831	2956	2256	1703	1275	941	709
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-16.5"	-39.0"	-74.5"	-128.1"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.9"	-30.1"	-63.4"	-114.9"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.6"	0.0"	-16.9"	-46.9"	-95.0"
TRAJ: 400 yd. zero	-1.5"	9.8"	15.1"	12.7"	0.0"	-25.7"	-69.6"
TRAJ: 500 yd. zero	-1.5"	14.9"	25.4"	28.2"	20.6"	0.0"	-38.7"
TRAJ: 600 yd. zero	-1.5"	21.4"	38.3"	47.5"	46.5"	32.3"	0.0"
VELOCITY (fps)	2700	2368	2065	1791	1550	1332	1165
ENERGY (ft. lbs.)	3562	2740	2085	1568	1174	867	663
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-17.9"	-42.3"	-80.8"	-139.3"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.6"	-32.5"	-68.7"	-124.8"
TRAJ: 300 yd. zero	-1.5"	6.0"	7.1"	0.0"	-18.3"	-50.9"	-103.4"
TRAJ: 400 yd. zero	-1.5"	10.6"	16.3"	13.8"	0.0"	-27.9"	-75.9"
TRAJ: 500 yd. zero	-1.5"	16.2"	27.5"	30.6"	22.4"	0.0"	-42.3"
TRAJ: 600 yd. zero	-1.5"	23.2"	41.6"	51.7"	50.6"	35.3"	0.0"
VELOCITY (fps)	2600	2277	1983	1717	1476	1272	1119
ENERGY (ft. lbs.)	3303	2533	1921	1441	1064	791	612
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.3"	-19.8"	-46.2"	-88.7"	-151.7"
TRAJ: 200 yd. zero	-1.5"	2.7"	0.0"	-11.9"	-35.5"	-75.4"	-135.8"
TRAJ: 300 yd. zero	-1.5"	6.8"	7.9"	0.0"	-19.7"	-55.5"	-112.0"
TRAJ: 400 yd. zero	-1.5"	11.6"	17.8"	14.8"	0.0"	-30.9"	-82.4"
TRAJ: 500 yd. zero	-1.5"	17.7"	30.2"	33.3"	24.7"	0.0"	-45.3"
TRAJ: 600 yd. zero	-1.5"	25.3"	45.3"	56.0"	55.0"	37.8"	0.0"
VELOCITY (fps)	2500	2186	1900	1644	1413	1223	1087
ENERGY (ft. lbs.)	3054	2334	1764	1321	976	731	578
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-22.0"	-50.9"	-97.7"	-166.0"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-13.0"	-38.9"	-82.6"	-147.8"
TRAJ: 300 yd. zero	-1.5"	7.4"	8.7"	0.0"	-21.5"	-60.9"	-121.8"
TRAJ: 400 yd. zero	-1.5"	12.7"	19.5"	16.2"	0.0"	-34.0"	-89.5"
TRAJ: 500 yd. zero	-1.5"	19.5"	33.1"	36.6"	27.2"	0.0"	-48.7"
TRAJ: 600 yd. zero	-1.5"	27.7"	49.3"	60.9"	59.7"	40.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2095	1818	1573	1352	1178	1057
ENERGY (ft. lbs.)	2814	2144	1614	1208	893	678	546
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.6"	-24.3"	-56.1"	-107.0"	-180.8"
TRAJ: 200 yd. zero	-1.5"	3.3"	0.0"	-14.3"	-42.7"	-90.3"	-160.6"
TRAJ: 300 yd. zero	-1.5"	8.1"	9.6"	0.0"	-23.6"	-66.4"	-132.1"
TRAJ: 400 yd. zero	-1.5"	14.0"	21.4"	17.7"	0.0"	-36.8"	-96.6"
TRAJ: 500 yd. zero	-1.5"	21.4"	36.1"	39.9"	29.5"	0.0"	-52.4"
TRAJ: 600 yd. zero	-1.5"	30.1"	53.6"	66.1"	64.4"	43.7"	0.0"
VELOCITY (fps)	2300	2004	1736	1492	1285	1133	1026
ENERGY (ft. lbs.)	2585	1962	1473	1088	807	627	514
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.3"	-26.4"	-61.2"	-116.3"	-196.2"
TRAJ: 200 yd. zero	-1.5"	3.7"	0.0"	-15.3"	-46.4"	-97.8"	-174.0"
TRAJ: 300 yd. zero	-1.5"	8.8"	10.3"	0.0"	-25.9"	-72.2"	-143.3"
TRAJ: 400 yd. zero	-1.5"	15.3"	23.2"	19.5"	0.0"	-39.7"	-104.3"
TRAJ: 500 yd. zero	-1.5"	23.3"	39.1"	43.3"	31.8"	0.0"	-56.6"
TRAJ: 600 yd. zero	-1.5"	32.7"	58.0"	71.7"	69.6"	47.2"	0.0"
VELOCITY (fps)	2200	1913	1656	1423	1230	1092	997
ENERGY (ft. lbs.)	2365	1788	1340	989	740	583	485
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.2"	-29.5"	-68.4"	-128.9"	-215.8"
TRAJ: 200 yd. zero	-1.5"	4.1"	0.0"	-17.1"	-51.9"	-108.2"	-191.0"
TRAJ: 300 yd. zero	-1.5"	9.8"	11.4"	0.0"	-29.0"	-79.7"	-156.7"
TRAJ: 400 yd. zero	-1.5"	17.1"	26.0"	21.8"	0.0"	-43.3"	-113.1"
TRAJ: 500 yd. zero	-1.5"	25.8"	43.3"	47.8"	34.7"	0.0"	-61.1"
TRAJ: 600 yd. zero	-1.5"	36.0"	63.7"	78.4"	75.5"	50.9"	0.0"
VELOCITY (fps)	2100	1823	1577	1355	1181	1059	972
ENERGY (ft. lbs.)	2155	1623	1215	897	681	548	462
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.3"	-32.8"	-75.2"	-141.5"	-234.8"
TRAJ: 200 yd. zero	-1.5"	4.7"	0.0"	-18.8"	-56.4"	-118.0"	-206.7"
TRAJ: 300 yd. zero	-1.5"	11.0"	12.5"	0.0"	-31.4"	-86.7"	-169.1"
TRAJ: 400 yd. zero	-1.5"	18.8"	28.2"	23.6"	0.0"	-47.4"	-121.9"
TRAJ: 500 yd. zero	-1.5"	28.3"	47.2"	52.0"	38.0"	0.0"	-65.0"
TRAJ: 600 yd. zero	-1.5"	39.1"	68.9"	84.6"	81.3"	54.2"	0.0"
VELOCITY (fps)	2000	1733	1489	1283	1131	1025	945
ENERGY (ft. lbs.)	1955	1467	1084	804	625	513	437
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.3"	-36.8"	-83.8"	-156.5"	-257.9"
TRAJ: 200 yd. zero	-1.5"	5.2"	0.0"	-21.1"	-63.1"	-130.7"	-226.9"
TRAJ: 300 yd. zero	-1.5"	12.2"	14.1"	0.0"	-34.9"	-95.5"	-184.6"
TRAJ: 400 yd. zero	-1.5"	21.0"	31.6"	26.2"	0.0"	-51.8"	-132.2"
TRAJ: 500 yd. zero	-1.5"	31.3"	52.3"	57.3"	41.5"	0.0"	-70.0"
TRAJ: 600 yd. zero	-1.5"	43.0"	75.6"	92.3"	88.2"	58.4"	0.0"

**303 CALIBER (.312" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .220 BALLISTIC COEFFICIENT: .362

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2449	2214	1995	1793	1608	1434
ENERGY (ft. lbs.)	2429	1997	1633	1327	1071	862	685
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-15.9"	-36.5"	-67.9"	-112.5"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.4"	-27.8"	-57.0"	-99.5"
TRAJ: 300 yd. zero	-1.5"	5.3"	6.3"	0.0"	-15.2"	-41.2"	-80.8"
TRAJ: 400 yd. zero	-1.5"	9.1"	13.9"	11.4"	0.0"	-22.2"	-57.7"
TRAJ: 500 yd. zero	-1.5"	13.6"	22.8"	24.8"	17.8"	0.0"	-31.0"
TRAJ: 600 yd. zero	-1.5"	18.8"	33.2"	40.3"	38.5"	25.9"	0.0"
VELOCITY (fps)	2600	2355	2127	1915	1719	1542	1374
ENERGY (ft. lbs.)	2252	1848	1507	1221	984	792	629
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-17.6"	-40.4"	-75.2"	-124.8"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.3"	-30.6"	-63.0"	-110.1"
TRAJ: 300 yd. zero	-1.5"	5.9"	6.9"	0.0"	-16.8"	-45.7"	-89.4"
TRAJ: 400 yd. zero	-1.5"	10.1"	15.3"	12.6"	0.0"	-24.7"	-64.1"
TRAJ: 500 yd. zero	-1.5"	15.0"	25.2"	27.4"	19.8"	0.0"	-34.5"
TRAJ: 600 yd. zero	-1.5"	20.8"	36.7"	44.7"	42.8"	28.8"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2262	2040	1834	1646	1467	1308
ENERGY (ft. lbs.)	2082	1704	1387	1121	902	717	570
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.5"	- 19.6"	- 44.2"	- 81.8"	- 136.0"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 11.4"	- 33.2"	- 68.0"	- 119.5"
TRAJ: 300 yd. zero	- 1.5"	6.6"	7.6"	0.0"	- 18.0"	- 49.0"	- 96.6"
TRAJ: 400 yd. zero	- 1.5"	11.1"	16.6"	13.5"	0.0"	- 26.4"	- 69.6"
TRAJ: 500 yd. zero	- 1.5"	16.4"	27.2"	29.4"	21.2"	0.0"	- 37.8"
TRAJ: 600 yd. zero	- 1.5"	22.7"	39.9"	48.3"	46.4"	31.6"	0.0"
VELOCITY (fps)	2400	2169	1953	1754	1574	1403	1255
ENERGY (ft. lbs.)	1919	1567	1271	1025	825	655	525
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.2"	- 21.5"	- 48.9"	- 90.2"	- 149.9"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 12.2"	- 36.5"	- 74.7"	- 131.3"
TRAJ: 300 yd. zero	- 1.5"	7.2"	8.2"	0.0"	- 20.2"	- 54.3"	- 106.9"
TRAJ: 400 yd. zero	- 1.5"	12.2"	18.3"	15.2"	0.0"	- 29.0"	- 76.5"
TRAJ: 500 yd. zero	- 1.5"	18.1"	29.9"	32.6"	23.2"	0.0"	- 41.6"
TRAJ: 600 yd. zero	- 1.5"	25.0"	43.8"	53.5"	51.0"	34.7"	0.0"
VELOCITY (fps)	2300	2076	1867	1675	1493	1331	1198
ENERGY (ft. lbs.)	1762	1435	1161	935	743	590	478
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.7"	- 23.8"	- 53.2"	- 98.4"	- 163.5"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 13.7"	- 39.7"	- 81.6"	- 143.3"
TRAJ: 300 yd. zero	- 1.5"	7.9"	9.2"	0.0"	- 21.4"	- 58.7"	- 115.8"
TRAJ: 400 yd. zero	- 1.5"	13.3"	19.9"	16.1"	0.0"	- 31.8"	- 83.7"
TRAJ: 500 yd. zero	- 1.5"	19.7"	32.6"	35.2"	25.5"	0.0"	- 45.4"
TRAJ: 600 yd. zero	- 1.5"	27.3"	47.8"	57.9"	55.8"	37.9"	0.0"
VELOCITY (fps)	2200	1983	1781	1598	1424	1273	1154
ENERGY (ft. lbs.)	1612	1310	1057	851	676	540	443
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.6"	- 26.4"	- 59.1"	- 109.2"	- 180.5"
TRAJ: 200 yd. zero	- 1.5"	3.8"	0.0"	- 15.0"	- 43.8"	- 90.0"	- 157.5"
TRAJ: 300 yd. zero	- 1.5"	8.8"	10.0"	0.0"	- 23.8"	- 65.0"	- 127.5"
TRAJ: 400 yd. zero	- 1.5"	14.8"	21.9"	17.9"	0.0"	- 35.2"	- 91.8"
TRAJ: 500 yd. zero	- 1.5"	21.8"	36.0"	39.0"	28.2"	0.0"	- 49.4"
TRAJ: 600 yd. zero	- 1.5"	30.1"	52.5"	63.8"	61.2"	41.2"	0.0"

### 303 CALIBER (.312" Dia.) 174 GRAIN ROUND NOSE

SECTIONAL DENSITY: .255 BALLISTIC COEFFICIENT: .256

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2259	1950	1674	1426	1224	1082
ENERGY (ft. lbs.)	2612	1971	1470	1083	786	579	453
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.4"	- 20.4"	- 47.9"	- 92.9"	- 159.3"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 12.2"	- 37.0"	- 79.2"	- 143.0"
TRAJ: 300 yd. zero	- 1.5"	6.8"	8.2"	0.0"	- 20.7"	- 58.9"	- 118.5"
TRAJ: 400 yd. zero	- 1.5"	12.0"	18.5"	15.6"	0.0"	- 32.9"	- 87.4"
TRAJ: 500 yd. zero	- 1.5"	18.6"	31.7"	35.4"	26.4"	0.0"	- 47.8"
TRAJ: 600 yd. zero	- 1.5"	26.6"	47.7"	59.3"	58.3"	39.9"	0.0"
VELOCITY (fps)	2500	2168	1868	1603	1366	1180	1054
ENERGY (ft. lbs.)	2415	1817	1349	993	721	538	429
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.0"	- 22.4"	- 52.2"	- 101.0"	- 172.7"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 13.4"	- 40.2"	- 86.0"	- 154.7"
TRAJ: 300 yd. zero	- 1.5"	7.5"	9.0"	0.0"	- 22.3"	- 63.6"	- 127.9"
TRAJ: 400 yd. zero	- 1.5"	13.1"	20.1"	16.8"	0.0"	- 35.7"	- 94.3"
TRAJ: 500 yd. zero	- 1.5"	20.2"	34.4"	38.2"	28.6"	0.0"	- 51.5"
TRAJ: 600 yd. zero	- 1.5"	28.8"	51.6"	64.0"	62.9"	42.9"	0.0"
VELOCITY (fps)	2400	2078	1787	1533	1308	1141	1027
ENERGY (ft. lbs.)	2226	1668	1234	908	661	503	408
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.8"	- 24.6"	- 57.7"	- 110.5"	- 187.9"
TRAJ: 200 yd. zero	- 1.5"	3.4"	0.0"	- 14.4"	- 44.0"	- 93.3"	- 167.4"
TRAJ: 300 yd. zero	- 1.5"	8.2"	9.6"	0.0"	- 24.8"	- 69.3"	- 138.5"
TRAJ: 400 yd. zero	- 1.5"	14.4"	22.0"	18.6"	0.0"	- 38.3"	- 101.3"
TRAJ: 500 yd. zero	- 1.5"	22.1"	37.4"	41.6"	30.6"	0.0"	- 55.3"
TRAJ: 600 yd. zero	- 1.5"	31.3"	55.8"	69.3"	67.5"	46.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	1987	1707	1455	1245	1096	995
ENERGY (ft. lbs.)	2044	1526	1126	818	599	464	383
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.6"	-27.2"	-63.5"	-121.1"	-204.6"
TRAJ: 200 yd. zero	-1.5"	3.8"	0.0"	-15.7"	-48.2"	-102.0"	-181.7"
TRAJ: 300 yd. zero	-1.5"	9.1"	10.5"	0.0"	-27.1"	-75.6"	-150.1"
TRAJ: 400 yd. zero	-1.5"	15.9"	24.1"	20.4"	0.0"	-41.7"	-109.3"
TRAJ: 500 yd. zero	-1.5"	24.2"	40.8"	45.4"	33.4"	0.0"	-59.3"
TRAJ: 600 yd. zero	-1.5"	34.1"	60.6"	75.1"	72.9"	49.4"	0.0"
VELOCITY (fps)	2200	1897	1628	1387	1195	1064	972
ENERGY (ft. lbs.)	1870	1391	1024	744	552	437	365
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.3"	-30.0"	-69.8"	-132.7"	-222.7"
TRAJ: 200 yd. zero	-1.5"	4.2"	0.0"	-17.5"	-53.1"	-111.9"	-197.7"
TRAJ: 300 yd. zero	-1.5"	10.0"	11.7"	0.0"	-29.7"	-82.6"	-162.5"
TRAJ: 400 yd. zero	-1.5"	17.5"	26.6"	22.3"	0.0"	-45.4"	-117.9"
TRAJ: 500 yd. zero	-1.5"	26.6"	44.8"	49.6"	36.4"	0.0"	-63.3"
TRAJ: 600 yd. zero	-1.5"	37.1"	65.9"	81.3"	78.6"	52.8"	0.0"
VELOCITY (fps)	2100	1807	1550	1322	1150	1034	949
ENERGY (ft. lbs.)	1704	1262	929	675	512	413	348
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.4"	-33.7"	-77.7"	-146.3"	-242.6"
TRAJ: 200 yd. zero	-1.5"	4.7"	0.0"	-19.5"	-58.8"	-122.5"	-214.2"
TRAJ: 300 yd. zero	-1.5"	11.3"	13.0"	0.0"	-32.7"	-90.0"	-175.1"
TRAJ: 400 yd. zero	-1.5"	19.4"	29.4"	24.6"	0.0"	-49.0"	-126.0"
TRAJ: 500 yd. zero	-1.5"	29.3"	49.0"	54.0"	39.3"	0.0"	-67.1"
TRAJ: 600 yd. zero	-1.5"	40.4"	71.4"	87.6"	84.0"	55.9"	0.0"
VELOCITY (fps)	2000	1718	1484	1253	1101	999	920
ENERGY (ft. lbs.)	1546	1141	828	607	468	385	327
TRAJ: 100 yd. zero	-1.5"	0.0"	-10.5"	-37.5"	-85.9"	-160.7"	-265.2"
TRAJ: 200 yd. zero	-1.5"	5.3"	0.0"	-21.8"	-64.9"	-134.4"	-233.7"
TRAJ: 300 yd. zero	-1.5"	12.5"	14.5"	0.0"	-35.8"	-98.1"	-190.1"
TRAJ: 400 yd. zero	-1.5"	21.5"	32.5"	26.9"	0.0"	-53.2"	-136.3"
TRAJ: 500 yd. zero	-1.5"	32.2"	53.8"	58.9"	42.6"	0.0"	-72.3"
TRAJ: 600 yd. zero	-1.5"	44.2"	77.9"	95.1"	90.9"	60.3"	0.0"
VELOCITY (fps)	1900	1630	1389	1197	1065	972	895
ENERGY (ft. lbs.)	1395	1027	746	553	438	365	310
TRAJ: 100 yd. zero	-1.5"	0.0"	-11.8"	-41.7"	-94.9"	-175.8"	-288.5"
TRAJ: 200 yd. zero	-1.5"	5.9"	0.0"	-23.9"	-71.2"	-146.1"	-252.8"
TRAJ: 300 yd. zero	-1.5"	13.9"	16.0"	0.0"	-39.3"	-106.2"	-204.9"
TRAJ: 400 yd. zero	-1.5"	23.7"	35.6"	29.5"	0.0"	-57.1"	-146.0"
TRAJ: 500 yd. zero	-1.5"	35.2"	58.5"	63.8"	45.7"	0.0"	-77.4"
TRAJ: 600 yd. zero	-1.5"	48.1"	84.3"	102.5"	97.4"	64.5"	0.0"

### 32 CALIBER (.321" Dia.) 170 GRAIN FLAT POINT

SECTIONAL DENSITY: .236 BALLISTIC COEFFICIENT: .238

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2200	2033	1876	1727	1591	1455	1331
ENERGY (ft. lbs.)	1827	1561	1328	1127	955	799	669
TRAJ: 50 yd. zero	-1.5"	0.0"	-8"	-3.8"	-10.1"	-19.8"	-33.7"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.8"	-8.7"	-18.2"	-31.7"
TRAJ: 150 yd. zero	-1.5"	1.3"	1.9"	0.0"	-4.9"	-13.4"	-26.0"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.4"	3.7"	0.0"	-7.2"	-18.5"
TRAJ: 250 yd. zero	-1.5"	4.0"	7.3"	8.1"	5.8"	0.0"	-9.9"
TRAJ: 300 yd. zero	-1.5"	5.6"	10.6"	13.0"	12.4"	8.3"	0.0"
VELOCITY (fps)	2100	1939	1786	1645	1505	1376	1263
ENERGY (ft. lbs.)	1665	1419	1205	1022	855	715	602
TRAJ: 50 yd. zero	-1.5"	0.0"	-8"	-4.6"	-11.8"	-22.6"	-38.3"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.3"	-9.9"	-20.4"	-35.8"
TRAJ: 150 yd. zero	-1.5"	1.5"	2.2"	0.0"	-5.4"	-14.8"	-29.0"
TRAJ: 200 yd. zero	-1.5"	2.9"	5.0"	4.1"	0.0"	-8.0"	-20.7"
TRAJ: 250 yd. zero	-1.5"	4.5"	8.2"	8.9"	6.4"	0.0"	-11.1"
TRAJ: 300 yd. zero	-1.5"	6.4"	11.9"	14.5"	13.9"	9.3"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2000	1844	1698	1564	1430	1309	1206
ENERGY (ft. lbs.)	1510	1284	1089	923	772	647	549
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.1"	-5.3"	-13.2"	-25.5"	-43.0"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-3.6"	-10.8"	-22.5"	-39.4"
TRAJ: 150 yd. zero	-1.5"	1.8"	2.4"	0.0"	-6.0"	-16.5"	-32.2"
TRAJ: 200 yd. zero	-1.5"	3.3"	5.4"	4.6"	0.0"	-8.9"	-23.1"
TRAJ: 250 yd. zero	-1.5"	5.1"	9.0"	9.9"	7.2"	0.0"	-12.3"
TRAJ: 300 yd. zero	-1.5"	7.2"	13.2"	16.1"	15.4"	10.3"	0.0"
VELOCITY (fps)	1900	1750	1612	1474	1348	1239	1150
ENERGY (ft. lbs.)	1363	1156	981	821	686	579	499
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.4"	-6.1"	-15.1"	-28.8"	-48.2"
TRAJ: 100 yd. zero	-1.5"	.7"	0.0"	-4.0"	-12.3"	-25.3"	-44.0"
TRAJ: 150 yd. zero	-1.5"	2.1"	2.7"	0.0"	-6.8"	-18.5"	-35.9"
TRAJ: 200 yd. zero	-1.5"	3.8"	6.2"	5.2"	0.0"	-9.9"	-25.6"
TRAJ: 250 yd. zero	-1.5"	5.8"	10.1"	11.1"	7.9"	0.0"	-13.7"
TRAJ: 300 yd. zero	-1.5"	8.0"	14.7"	18.0"	17.1"	11.4"	0.0"
VELOCITY (fps)	1800	1657	1526	1396	1280	1182	1101
ENERGY (ft. lbs.)	1223	1037	880	736	618	527	458
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.8"	-7.5"	-17.7"	-33.6"	-55.1"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-4.7"	-14.0"	-29.0"	-49.6"
TRAJ: 150 yd. zero	-1.5"	2.5"	3.2"	0.0"	-7.7"	-21.0"	-40.1"
TRAJ: 200 yd. zero	-1.5"	4.4"	7.0"	5.8"	0.0"	-11.4"	-28.5"
TRAJ: 250 yd. zero	-1.5"	6.7"	11.6"	12.7"	9.2"	0.0"	-14.7"
TRAJ: 300 yd. zero	-1.5"	9.2"	16.5"	20.1"	19.0"	12.3"	0.0"
VELOCITY (fps)	1700	1565	1432	1311	1207	1125	1055
ENERGY (ft. lbs.)	1091	925	774	649	550	478	421
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.1"	-8.8"	-20.3"	-37.9"	-62.4"
TRAJ: 100 yd. zero	-1.5"	1.1"	0.0"	-5.4"	-16.0"	-32.5"	-55.9"
TRAJ: 150 yd. zero	-1.5"	2.9"	3.6"	0.0"	-8.8"	-23.5"	-45.1"
TRAJ: 200 yd. zero	-1.5"	5.1"	8.0"	6.6"	0.0"	-12.4"	-31.8"
TRAJ: 250 yd. zero	-1.5"	7.6"	13.0"	14.1"	10.0"	0.0"	-16.8"
TRAJ: 300 yd. zero	-1.5"	10.4"	18.7"	22.6"	21.3"	14.1"	0.0"

**8 MM (.323" Dia.) 125 GRAIN SPIRE POINT**  
**SECTIONAL DENSITY: .171 BALLISTIC COEFFICIENT: .245**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3600	3166	2783	2392	2056	1756	1486
ENERGY (ft. lbs.)	3598	2783	2120	1588	1174	856	613
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.0"	-8.7"	-21.7"	-43.2"	-75.6"
TRAJ: 200 yd. zero	-1.5"	1.0"	0.0"	-5.7"	-17.7"	-38.1"	-69.6"
TRAJ: 300 yd. zero	-1.5"	2.9"	3.8"	0.0"	-10.0"	-28.6"	-58.2"
TRAJ: 400 yd. zero	-1.5"	5.4"	8.9"	7.6"	0.0"	-16.0"	-43.0"
TRAJ: 500 yd. zero	-1.5"	8.6"	15.3"	17.2"	12.8"	0.0"	-23.8"
TRAJ: 600 yd. zero	-1.5"	12.6"	23.2"	29.1"	28.7"	19.8"	0.0"
VELOCITY (fps)	3500	3073	2677	2313	1986	1694	1434
ENERGY (ft. lbs.)	3401	2622	1989	1486	1095	797	571
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.2"	-9.4"	-23.3"	-46.2"	-81.2"
TRAJ: 200 yd. zero	-1.5"	1.1"	0.0"	-6.0"	-18.7"	-40.5"	-74.4"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-10.7"	-30.4"	-62.3"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.4"	8.0"	0.0"	-17.0"	-46.2"
TRAJ: 500 yd. zero	-1.5"	9.2"	16.2"	18.3"	13.6"	0.0"	-25.8"
TRAJ: 600 yd. zero	-1.5"	13.5"	24.8"	31.2"	30.8"	21.5"	0.0"
VELOCITY (fps)	3400	2980	2591	2236	1916	1633	1382
ENERGY (ft. lbs.)	3209	2466	1863	1388	1019	741	530
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.4"	-10.3"	-25.1"	-49.5"	-87.0"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-6.6"	-20.1"	-43.4"	-79.6"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.4"	0.0"	-11.3"	-32.3"	-66.4"
TRAJ: 400 yd. zero	-1.5"	6.3"	10.1"	8.5"	0.0"	-18.1"	-49.3"
TRAJ: 500 yd. zero	-1.5"	9.9"	17.4"	19.4"	14.6"	0.0"	-27.5"
TRAJ: 600 yd. zero	-1.5"	14.5"	26.6"	33.2"	32.9"	23.0"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	2887	2505	2159	1847	1574	1332
ENERGY (ft. lbs.)	3023	2314	1742	1294	947	688	493
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-11.2"	-27.3"	-53.7"	-94.0"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-7.0"	-21.8"	-46.8"	-85.7"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.7"	0.0"	-12.3"	-35.0"	-71.6"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.9"	9.3"	0.0"	-19.5"	-53.0"
TRAJ: 500 yd. zero	-1.5"	10.7"	18.7"	21.0"	15.6"	0.0"	-29.6"
TRAJ: 600 yd. zero	-1.5"	15.7"	28.8"	35.8"	35.4"	24.7"	0.0"
VELOCITY (fps)	3200	2794	2420	2082	1779	1506	1278
ENERGY (ft. lbs.)	2843	2168	1626	1204	878	629	453
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-12.1"	-29.3"	-57.6"	-101.5"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.5"	-23.3"	-50.1"	-92.5"
TRAJ: 300 yd. zero	-1.5"	4.0"	5.1"	0.0"	-13.2"	-37.5"	-77.3"
TRAJ: 400 yd. zero	-1.5"	7.3"	11.7"	9.9"	0.0"	-21.0"	-57.5"
TRAJ: 500 yd. zero	-1.5"	11.5"	20.1"	22.5"	16.8"	0.0"	-32.3"
TRAJ: 600 yd. zero	-1.5"	16.9"	30.8"	38.7"	38.4"	28.9"	0.0"
VELOCITY (fps)	3100	2702	2336	2006	1712	1449	1233
ENERGY (ft. lbs.)	2668	2026	1515	1118	813	583	422
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.4"	-13.2"	-31.7"	-62.4"	-109.7"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-8.1"	-24.9"	-53.9"	-99.5"
TRAJ: 300 yd. zero	-1.5"	4.4"	5.4"	0.0"	-14.1"	-40.3"	-83.2"
TRAJ: 400 yd. zero	-1.5"	7.9"	12.5"	10.6"	0.0"	-22.6"	-62.0"
TRAJ: 500 yd. zero	-1.5"	12.5"	21.6"	24.2"	18.2"	0.0"	-34.8"
TRAJ: 600 yd. zero	-1.5"	18.3"	33.2"	41.8"	41.4"	29.0"	0.0"
VELOCITY (fps)	3000	2609	2252	1931	1646	1393	1193
ENERGY (ft. lbs.)	2499	1890	1408	1035	752	539	395
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-14.5"	-34.6"	-67.8"	-119.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.9"	-27.1"	-58.4"	-107.8"
TRAJ: 300 yd. zero	-1.5"	4.9"	6.0"	0.0"	-15.2"	-43.5"	-89.9"
TRAJ: 400 yd. zero	-1.5"	8.7"	13.6"	11.4"	0.0"	-24.5"	-67.0"
TRAJ: 500 yd. zero	-1.5"	13.6"	23.4"	26.1"	19.6"	0.0"	-37.6"
TRAJ: 600 yd. zero	-1.5"	19.8"	35.9"	45.0"	44.7"	31.3"	0.0"
VELOCITY (fps)	2900	2517	2169	1857	1582	1339	1156
ENERGY (ft. lbs.)	2335	1759	1306	957	695	498	371
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.7"	-37.5"	-73.5"	-128.6"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.6"	-29.3"	-63.2"	-116.3"
TRAJ: 300 yd. zero	-1.5"	5.3"	6.4"	0.0"	-16.5"	-47.2"	-97.1"
TRAJ: 400 yd. zero	-1.5"	9.4"	14.7"	12.4"	0.0"	-26.6"	-72.3"
TRAJ: 500 yd. zero	-1.5"	14.7"	25.3"	28.3"	21.3"	0.0"	-40.4"
TRAJ: 600 yd. zero	-1.5"	21.4"	38.8"	48.6"	48.2"	33.7"	0.0"
VELOCITY (fps)	2800	2425	2087	1783	1509	1280	1113
ENERGY (ft. lbs.)	2177	1633	1209	883	632	455	344
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.5"	-17.1"	-40.8"	-79.9"	-138.8"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-10.3"	-31.8"	-68.6"	-125.3"
TRAJ: 300 yd. zero	-1.5"	5.7"	6.9"	0.0"	-17.9"	-51.3"	-104.5"
TRAJ: 400 yd. zero	-1.5"	10.2"	15.9"	13.5"	0.0"	-28.8"	-77.6"
TRAJ: 500 yd. zero	-1.5"	16.0"	27.5"	30.8"	23.1"	0.0"	-42.9"
TRAJ: 600 yd. zero	-1.5"	23.1"	41.8"	52.3"	51.7"	35.8"	0.0"
VELOCITY (fps)	2700	2334	2005	1711	1448	1233	1083
ENERGY (ft. lbs.)	2024	1513	1116	812	582	422	326
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.9"	-18.7"	-44.6"	-87.4"	-151.2"
TRAJ: 200 yd. zero	-1.5"	2.5"	0.0"	-11.2"	-34.6"	-74.9"	-136.3"
TRAJ: 300 yd. zero	-1.5"	6.2"	7.5"	0.0"	-19.6"	-56.1"	-113.7"
TRAJ: 400 yd. zero	-1.5"	11.2"	17.3"	14.7"	0.0"	-31.6"	-84.2"
TRAJ: 500 yd. zero	-1.5"	17.5"	30.0"	33.7"	25.3"	0.0"	-46.3"
TRAJ: 600 yd. zero	-1.5"	25.2"	45.4"	58.9"	56.2"	38.6"	0.0"
VELOCITY (fps)	2600	2244	1924	1640	1388	1189	1055
ENERGY (ft. lbs.)	1877	1398	1028	747	535	392	309
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.6"	-20.8"	-48.9"	-95.2"	-163.6"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-12.3"	-37.6"	-81.0"	-146.6"
TRAJ: 300 yd. zero	-1.5"	6.9"	8.2"	0.0"	-21.1"	-60.5"	-122.0"
TRAJ: 400 yd. zero	-1.5"	12.2"	18.8"	15.9"	0.0"	-34.0"	-90.2"
TRAJ: 500 yd. zero	-1.5"	19.0"	32.4"	36.3"	27.2"	0.0"	-49.3"
TRAJ: 600 yd. zero	-1.5"	27.3"	48.9"	61.0"	60.2"	41.2"	0.0"



**8 MM (.323" Dia.) 150 GRAIN SPIRE POINT**  
SECTIONAL DENSITY: .205 BALLISTIC COEFFICIENT: .282

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3400	3034	2690	2371	2080	1814	1579
ENERGY (ft. lbs.)	3851	3066	2411	1873	1441	1097	830
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.3"	-9.5"	-23.1"	-45.1"	-77.9"
TRAJ: 200 yd. zero	-1.5"	1.2"	0.0"	-8.0"	-18.4"	-39.3"	-70.9"
TRAJ: 300 yd. zero	-1.5"	3.2"	4.0"	0.0"	-10.4"	-29.2"	-58.8"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.2"	7.8"	0.0"	-16.1"	-43.2"
TRAJ: 500 yd. zero	-1.5"	9.0"	15.7"	17.5"	12.9"	0.0"	-23.7"
TRAJ: 600 yd. zero	-1.5"	13.0"	23.7"	29.4"	28.8"	19.8"	0.0"
VELOCITY (fps)	3300	2940	2602	2291	2006	1748	1511
ENERGY (ft. lbs.)	3628	2879	2256	1748	1341	1018	761
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.6"	-10.5"	-25.0"	-48.3"	-82.9"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.5"	-19.8"	-41.8"	-75.1"
TRAJ: 300 yd. zero	-1.5"	3.5"	4.4"	0.0"	-11.0"	-30.8"	-61.9"
TRAJ: 400 yd. zero	-1.5"	6.3"	9.9"	8.3"	0.0"	-17.1"	-45.4"
TRAJ: 500 yd. zero	-1.5"	9.7"	16.8"	18.5"	13.7"	0.0"	-24.9"
TRAJ: 600 yd. zero	-1.5"	13.8"	25.1"	31.0"	30.3"	20.8"	0.0"
VELOCITY (fps)	3200	2846	2515	2211	1934	1683	1455
ENERGY (ft. lbs.)	3412	2698	2107	1628	1246	944	705
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.9"	-11.3"	-27.1"	-52.6"	-90.2"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-7.0"	-21.3"	-45.3"	-81.5"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.7"	0.0"	-11.9"	-33.7"	-67.5"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.7"	9.0"	0.0"	-18.7"	-49.5"
TRAJ: 500 yd. zero	-1.5"	10.5"	18.2"	20.2"	15.0"	0.0"	-27.0"
TRAJ: 600 yd. zero	-1.5"	15.0"	27.2"	33.8"	33.0"	22.5"	0.0"
VELOCITY (fps)	3100	2752	2428	2132	1862	1620	1400
ENERGY (ft. lbs.)	3202	2523	1964	1514	1155	874	653
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-12.4"	-29.6"	-57.0"	-97.8"
TRAJ: 200 yd. zero	-1.5"	1.6"	0.0"	-7.6"	-23.3"	-49.1"	-88.3"
TRAJ: 300 yd. zero	-1.5"	4.1"	5.1"	0.0"	-13.0"	-36.3"	-73.0"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.7"	9.8"	0.0"	-20.0"	-53.4"
TRAJ: 500 yd. zero	-1.5"	11.4"	19.7"	21.8"	16.0"	0.0"	-29.3"
TRAJ: 600 yd. zero	-1.5"	16.3"	29.5"	36.5"	35.6"	24.5"	0.0"
VELOCITY (fps)	3000	2659	2342	2053	1791	1558	1347
ENERGY (ft. lbs.)	2998	2355	1828	1405	1068	809	604
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.5"	-13.5"	-31.9"	-61.3"	-105.1"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.1"	-24.8"	-52.5"	-94.4"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.5"	0.0"	-13.9"	-38.8"	-78.0"
TRAJ: 400 yd. zero	-1.5"	8.0"	12.4"	10.4"	0.0"	-21.4"	-57.2"
TRAJ: 500 yd. zero	-1.5"	12.3"	21.0"	23.3"	17.2"	0.0"	-31.4"
TRAJ: 600 yd. zero	-1.5"	17.5"	31.5"	39.0"	38.1"	26.2"	0.0"
VELOCITY (fps)	2900	2565	2257	1976	1721	1487	1288
ENERGY (ft. lbs.)	2802	2192	1697	1300	986	737	553
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-14.8"	-34.5"	-66.3"	-113.7"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.9"	-26.8"	-56.6"	-102.1"
TRAJ: 300 yd. zero	-1.5"	4.9"	6.0"	0.0"	-14.8"	-41.6"	-84.1"
TRAJ: 400 yd. zero	-1.5"	8.6"	13.4"	11.1"	0.0"	-23.1"	-61.8"
TRAJ: 500 yd. zero	-1.5"	13.3"	22.7"	25.0"	18.5"	0.0"	-34.1"
TRAJ: 600 yd. zero	-1.5"	19.0"	34.0"	42.1"	41.2"	28.4"	0.0"
VELOCITY (fps)	2800	2472	2172	1898	1652	1428	1241
ENERGY (ft. lbs.)	2612	2037	1572	1201	909	679	513
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-16.2"	-38.0"	-72.5"	-123.8"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-9.6"	-29.3"	-61.5"	-110.6"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.4"	0.0"	-16.4"	-45.5"	-91.3"
TRAJ: 400 yd. zero	-1.5"	9.5"	14.7"	12.4"	0.0"	-24.9"	-66.6"
TRAJ: 500 yd. zero	-1.5"	14.5"	24.6"	27.3"	19.9"	0.0"	-36.7"
TRAJ: 600 yd. zero	-1.5"	20.6"	36.9"	45.7"	44.4"	30.6"	0.0"
VELOCITY (fps)	2700	2380	2088	1822	1585	1370	1197
ENERGY (ft. lbs.)	2429	1888	1452	1106	837	625	477
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-17.8"	-41.8"	-79.4"	-135.6"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.6"	-32.0"	-67.4"	-121.3"
TRAJ: 300 yd. zero	-1.5"	5.9"	7.1"	0.0"	-17.8"	-49.6"	-100.0"
TRAJ: 400 yd. zero	-1.5"	10.4"	16.0"	13.4"	0.0"	-27.3"	-73.2"
TRAJ: 500 yd. zero	-1.5"	15.9"	27.0"	29.8"	21.9"	0.0"	-40.4"
TRAJ: 600 yd. zero	-1.5"	22.6"	40.4"	50.0"	48.8"	33.7"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2289	2005	1747	1510	1306	1152
ENERGY (ft. lbs.)	2252	1745	1339	1016	759	568	442
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.2"	-19.3"	-44.8"	-86.0"	-146.6"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-11.4"	-34.4"	-72.9"	-130.9"
TRAJ: 300 yd. zero	-1.5"	6.4"	7.7"	0.0"	-19.0"	-53.7"	-107.9"
TRAJ: 400 yd. zero	-1.5"	11.2"	17.2"	14.3"	0.0"	-29.9"	-79.3"
TRAJ: 500 yd. zero	-1.5"	17.2"	29.2"	32.3"	23.9"	0.0"	-43.3"
TRAJ: 600 yd. zero	-1.5"	24.4"	43.6"	54.0"	52.9"	36.2"	0.0"
VELOCITY (fps)	2500	2197	1921	1672	1445	1254	1112
ENERGY (ft. lbs.)	2082	1609	1230	932	696	524	412
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.9"	-21.4"	-49.3"	-94.2"	-160.5"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-12.4"	-37.4"	-79.4"	-142.6"
TRAJ: 300 yd. zero	-1.5"	7.1"	8.3"	0.0"	-20.8"	-58.6"	-117.6"
TRAJ: 400 yd. zero	-1.5"	12.3"	18.7"	15.6"	0.0"	-32.5"	-86.4"
TRAJ: 500 yd. zero	-1.5"	18.9"	31.8"	35.2"	26.1"	0.0"	-47.3"
TRAJ: 600 yd. zero	-1.5"	26.8"	47.6"	58.8"	57.6"	39.5"	0.0"
VELOCITY (fps)	2400	2106	1838	1599	1382	1206	1080
ENERGY (ft. lbs.)	1919	1478	1126	852	636	484	388
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.5"	-23.5"	-54.1"	-102.9"	-173.8"
TRAJ: 200 yd. zero	-1.5"	3.3"	0.0"	-13.7"	-41.0"	-86.6"	-154.2"
TRAJ: 300 yd. zero	-1.5"	7.8"	9.1"	0.0"	-22.7"	-63.7"	-126.8"
TRAJ: 400 yd. zero	-1.5"	13.5"	20.5"	17.1"	0.0"	-35.3"	-92.7"
TRAJ: 500 yd. zero	-1.5"	20.6"	34.7"	38.3"	28.3"	0.0"	-50.3"
TRAJ: 600 yd. zero	-1.5"	29.0"	51.4"	63.4"	61.8"	41.9"	0.0"

**8 MM (.323" Dia.) 170 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .233 BALLISTIC COEFFICIENT: .201

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3200	2949	2710	2482	2268	2067	1879
ENERGY (ft. lbs.)	3866	3284	2772	2326	1942	1613	1333
TRAJ: 50 yd. zero	-1.5"	0.0"	.5"	-.2"	-2.3"	-6.3"	-12.2"
TRAJ: 100 yd. zero	-1.5"	-.2"	0.0"	-.9"	-3.3"	-7.5"	-13.7"
TRAJ: 150 yd. zero	-1.5"	.1"	.6"	0.0"	-2.0"	-5.9"	-11.8"
TRAJ: 200 yd. zero	-1.5"	.6"	1.7"	1.5"	0.0"	-3.3"	-8.7"
TRAJ: 250 yd. zero	-1.5"	1.3"	3.0"	3.6"	2.7"	0.0"	-4.7"
TRAJ: 300 yd. zero	-1.5"	2.0"	4.6"	5.9"	5.8"	3.9"	0.0"
VELOCITY (fps)	3100	2854	2618	2396	2187	1992	1809
ENERGY (ft. lbs.)	3629	3075	2589	2168	1806	1498	1235
TRAJ: 50 yd. zero	-1.5"	0.0"	.4"	-.5"	-2.9"	-7.2"	-13.8"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.0"	-3.7"	-8.2"	-15.0"
TRAJ: 150 yd. zero	-1.5"	.2"	.7"	0.0"	-2.2"	-6.4"	-12.8"
TRAJ: 200 yd. zero	-1.5"	.7"	1.9"	1.7"	0.0"	-3.6"	-9.4"
TRAJ: 250 yd. zero	-1.5"	1.5"	3.3"	3.9"	2.9"	0.0"	-5.0"
TRAJ: 300 yd. zero	-1.5"	2.3"	5.0"	6.4"	6.3"	4.2"	0.0"
VELOCITY (fps)	3000	2758	2528	2311	2107	1917	1739
ENERGY (ft. lbs.)	3398	2872	2412	2016	1677	1387	1142
TRAJ: 50 yd. zero	-1.5"	0.0"	.3"	-.7"	-3.4"	-8.2"	-15.4"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.2"	-4.1"	-9.0"	-16.4"
TRAJ: 150 yd. zero	-1.5"	.3"	.8"	0.0"	-2.4"	-7.0"	-13.9"
TRAJ: 200 yd. zero	-1.5"	.9"	2.1"	1.9"	0.0"	-3.9"	-10.2"
TRAJ: 250 yd. zero	-1.5"	1.7"	3.6"	4.2"	3.1"	0.0"	-5.5"
TRAJ: 300 yd. zero	-1.5"	2.6"	5.5"	7.0"	6.8"	4.6"	0.0"
VELOCITY (fps)	2900	2663	2438	2226	2028	1843	1671
ENERGY (ft. lbs.)	3175	2677	2243	1871	1553	1282	1055
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.0"	-4.1"	-9.4"	-17.3"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.3"	-4.5"	-9.9"	-18.0"
TRAJ: 150 yd. zero	-1.5"	.4"	.9"	0.0"	-2.7"	-7.6"	-15.2"
TRAJ: 200 yd. zero	-1.5"	1.0"	2.3"	2.0"	0.0"	-4.2"	-11.1"
TRAJ: 250 yd. zero	-1.5"	1.9"	4.0"	4.6"	3.4"	0.0"	-6.0"
TRAJ: 300 yd. zero	-1.5"	2.9"	6.0"	7.6"	7.5"	5.0"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2800	2567	2348	2142	1949	1769	1605
ENERGY (ft. lbs.)	2960	2489	2082	1733	1435	1182	972
TRAJ: 50 yd. zero	- 1.5"	0.0"	.2"	- 1.3"	- 4.7"	- 10.5"	- 19.0"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.5"	- 5.0"	- 10.9"	- 19.5"
TRAJ: 150 yd. zero	- 1.5"	.4"	1.0"	0.0"	- 2.9"	- 8.3"	- 16.4"
TRAJ: 200 yd. zero	- 1.5"	1.2"	2.5"	2.2"	0.0"	- 4.6"	- 11.9"
TRAJ: 250 yd. zero	- 1.5"	2.1"	4.4"	5.0"	3.7"	0.0"	- 6.3"
TRAJ: 300 yd. zero	- 1.5"	3.2"	6.5"	8.2"	8.0"	5.3"	0.0"
VELOCITY (fps)	2700	2473	2259	2059	1872	1698	1540
ENERGY (ft. lbs.)	2753	2309	1927	1601	1323	1088	895
TRAJ: 50 yd. zero	- 1.5"	0.0"	.1"	- 1.6"	- 5.5"	- 11.8"	- 21.2"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.7"	- 5.6"	- 11.9"	- 21.3"
TRAJ: 150 yd. zero	- 1.5"	.6"	1.2"	0.0"	- 3.2"	- 9.0"	- 17.8"
TRAJ: 200 yd. zero	- 1.5"	1.4"	2.8"	2.4"	0.0"	- 4.9"	- 12.9"
TRAJ: 250 yd. zero	- 1.5"	2.4"	4.8"	5.4"	3.9"	0.0"	- 7.0"
TRAJ: 300 yd. zero	- 1.5"	3.5"	7.1"	8.9"	8.8"	5.9"	0.0"
VELOCITY (fps)	2600	2379	2171	1976	1794	1627	1466
ENERGY (ft. lbs.)	2552	2136	1780	1475	1216	1000	812
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 1.9"	- 6.2"	- 13.3"	- 23.6"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.8"	- 6.1"	- 13.1"	- 23.3"
TRAJ: 150 yd. zero	- 1.5"	.7"	1.3"	0.0"	- 3.5"	- 9.9"	- 19.6"
TRAJ: 200 yd. zero	- 1.5"	1.6"	3.1"	2.7"	0.0"	- 5.4"	- 14.2"
TRAJ: 250 yd. zero	- 1.5"	2.7"	5.2"	6.0"	4.4"	0.0"	- 7.6"
TRAJ: 300 yd. zero	- 1.5"	3.9"	7.8"	9.8"	9.5"	6.4"	0.0"
VELOCITY (fps)	2500	2285	2083	1894	1718	1558	1404
ENERGY (ft. lbs.)	2360	1971	1638	1354	1115	917	744
TRAJ: 50 yd. zero	- 1.5"	0.0"	-.2"	- 2.4"	- 7.2"	- 14.9"	- 26.2"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.1"	- 6.8"	- 14.3"	- 25.5"
TRAJ: 150 yd. zero	- 1.5"	.8"	1.4"	0.0"	- 3.9"	- 10.8"	- 21.3"
TRAJ: 200 yd. zero	- 1.5"	1.8"	3.4"	3.0"	0.0"	- 5.8"	- 15.3"
TRAJ: 250 yd. zero	- 1.5"	3.0"	5.8"	6.5"	4.7"	0.0"	- 8.2"
TRAJ: 300 yd. zero	- 1.5"	4.4"	8.5"	10.7"	10.2"	6.9"	0.0"
VELOCITY (fps)	2400	2191	1995	1812	1643	1480	1334
ENERGY (ft. lbs.)	2175	1812	1503	1239	1020	828	672
TRAJ: 50 yd. zero	- 1.5"	0.0"	-.3"	- 2.9"	- 8.2"	- 16.8"	- 29.5"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.4"	- 7.5"	- 15.9"	- 28.3"
TRAJ: 150 yd. zero	- 1.5"	1.0"	1.8"	0.0"	- 4.2"	- 11.9"	- 23.5"
TRAJ: 200 yd. zero	- 1.5"	2.1"	3.8"	3.2"	0.0"	- 6.5"	- 17.0"
TRAJ: 250 yd. zero	- 1.5"	3.4"	6.4"	7.2"	5.2"	0.0"	- 9.2"
TRAJ: 300 yd. zero	- 1.5"	4.9"	9.5"	11.8"	11.4"	7.7"	0.0"
VELOCITY (fps)	2300	2097	1907	1730	1569	1414	1277
ENERGY (ft. lbs.)	1997	1661	1374	1131	930	755	616
TRAJ: 50 yd. zero	- 1.5"	0.0"	-.4"	- 3.4"	- 9.5"	- 19.1"	- 33.0"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.7"	- 8.5"	- 17.8"	- 31.5"
TRAJ: 150 yd. zero	- 1.5"	1.2"	1.8"	0.0"	- 4.8"	- 13.3"	- 26.0"
TRAJ: 200 yd. zero	- 1.5"	2.4"	4.3"	3.7"	0.0"	- 7.2"	- 18.7"
TRAJ: 250 yd. zero	- 1.5"	3.8"	7.2"	8.0"	5.8"	0.0"	- 10.0"
TRAJ: 300 yd. zero	- 1.5"	5.5"	10.5"	13.0"	12.5"	8.4"	0.0"

**8 MM (.323" Dia.) 220 GRAIN SPIRE POINT**  
**SECTIONAL DENSITY: .301 BALLISTIC COEFFICIENT: .448**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2687	2483	2290	2108	1936	1775
ENERGY (ft. lbs.)	4109	3527	3012	2562	2171	1832	1539
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.3"	- 12.5"	- 28.6"	- 52.7"	- 86.5"
TRAJ: 200 yd. zero	- 1.5"	1.7"	0.0"	- 7.4"	- 21.8"	- 44.3"	- 76.4"
TRAJ: 300 yd. zero	- 1.5"	4.2"	5.0"	0.0"	- 11.8"	- 31.8"	- 61.4"
TRAJ: 400 yd. zero	- 1.5"	7.2"	10.9"	8.9"	0.0"	- 17.0"	- 43.6"
TRAJ: 500 yd. zero	- 1.5"	10.6"	17.7"	19.1"	13.6"	0.0"	- 23.2"
TRAJ: 600 yd. zero	- 1.5"	14.4"	25.5"	30.7"	29.1"	19.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2591	2392	2204	2027	1860	1704
ENERGY (ft. lbs.)	3831	3280	2796	2374	2008	1691	1419
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-13.7"	-31.1"	-57.3"	-94.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.1"	-23.6"	-47.9"	-82.8"
TRAJ: 300 yd. zero	-1.5"	4.6"	5.4"	0.0"	-12.8"	-34.3"	-66.5"
TRAJ: 400 yd. zero	-1.5"	7.8"	11.8"	9.6"	0.0"	-18.3"	-47.3"
TRAJ: 500 yd. zero	-1.5"	11.5"	19.2"	20.8"	14.7"	0.0"	-25.3"
TRAJ: 600 yd. zero	-1.5"	15.7"	27.6"	33.3"	31.6"	21.1"	0.0"
VELOCITY (fps)	2700	2495	2302	2119	1947	1785	1635
ENERGY (ft. lbs.)	3562	3043	2589	2195	1852	1557	1306
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.1"	-34.0"	-62.4"	-101.4"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-25.6"	-51.9"	-88.8"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.9"	0.0"	-13.8"	-37.2"	-71.2"
TRAJ: 400 yd. zero	-1.5"	8.5"	12.8"	10.4"	0.0"	-19.8"	-50.3"
TRAJ: 500 yd. zero	-1.5"	12.5"	20.8"	22.3"	15.9"	0.0"	-26.5"
TRAJ: 600 yd. zero	-1.5"	16.9"	29.6"	35.6"	33.6"	22.1"	0.0"
VELOCITY (fps)	2600	2401	2213	2035	1868	1711	1567
ENERGY (ft. lbs.)	3303	2816	2392	2023	1704	1431	1201
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-16.6"	-37.2"	-68.3"	-111.1"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-9.6"	-27.9"	-56.6"	-97.1"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.4"	0.0"	-15.0"	-40.6"	-77.9"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.0"	11.3"	0.0"	-21.7"	-55.2"
TRAJ: 500 yd. zero	-1.5"	13.7"	22.7"	24.4"	17.4"	0.0"	-29.1"
TRAJ: 600 yd. zero	-1.5"	18.5"	32.4"	39.0"	36.9"	24.3"	0.0"
VELOCITY (fps)	2500	2306	2123	1951	1788	1638	1491
ENERGY (ft. lbs.)	3054	2599	2203	1860	1563	1312	1086
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-18.3"	-40.8"	-75.1"	-121.6"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-10.5"	-30.5"	-62.2"	-106.0"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.0"	0.0"	-16.4"	-44.6"	-84.9"
TRAJ: 400 yd. zero	-1.5"	10.2"	15.3"	12.3"	0.0"	-24.0"	-60.2"
TRAJ: 500 yd. zero	-1.5"	15.0"	24.9"	26.8"	19.3"	0.0"	-31.3"
TRAJ: 600 yd. zero	-1.5"	20.3"	35.4"	42.5"	40.2"	26.2"	0.0"
VELOCITY (fps)	2400	2212	2034	1867	1710	1567	1426
ENERGY (ft. lbs.)	2814	2390	2022	1703	1430	1200	993
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.8"	-20.2"	-45.2"	-81.9"	-133.2"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.5"	-33.6"	-67.4"	-115.8"
TRAJ: 300 yd. zero	-1.5"	6.8"	7.7"	0.0"	-18.1"	-48.2"	-92.6"
TRAJ: 400 yd. zero	-1.5"	11.3"	16.8"	13.6"	0.0"	-25.4"	-65.4"
TRAJ: 500 yd. zero	-1.5"	16.4"	27.0"	28.9"	20.4"	0.0"	-34.8"
TRAJ: 600 yd. zero	-1.5"	22.2"	38.6"	46.3"	43.6"	29.0"	0.0"
VELOCITY (fps)	2300	2117	1945	1783	1634	1487	1353
ENERGY (ft. lbs.)	2585	2191	1849	1554	1304	1080	894
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.5"	-22.5"	-49.3"	-89.4"	-145.6"
TRAJ: 200 yd. zero	-1.5"	3.3"	0.0"	-12.7"	-36.3"	-73.1"	-126.1"
TRAJ: 300 yd. zero	-1.5"	7.5"	8.5"	0.0"	-19.3"	-51.8"	-100.6"
TRAJ: 400 yd. zero	-1.5"	12.3"	18.2"	14.5"	0.0"	-27.6"	-71.5"
TRAJ: 500 yd. zero	-1.5"	17.9"	29.3"	31.1"	22.2"	0.0"	-38.3"
TRAJ: 600 yd. zero	-1.5"	24.3"	42.1"	50.3"	47.7"	32.0"	0.0"
VELOCITY (fps)	2200	2023	1856	1701	1558	1418	1292
ENERGY (ft. lbs.)	2365	2000	1684	1413	1186	982	816
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.3"	-25.2"	-55.4"	-100.3"	-163.1"
TRAJ: 200 yd. zero	-1.5"	3.7"	0.0"	-14.2"	-40.8"	-82.1"	-141.2"
TRAJ: 300 yd. zero	-1.5"	8.4"	9.5"	0.0"	-21.7"	-58.2"	-112.6"
TRAJ: 400 yd. zero	-1.5"	13.9"	20.4"	16.3"	0.0"	-31.0"	-80.0"
TRAJ: 500 yd. zero	-1.5"	20.1"	32.8"	35.0"	24.9"	0.0"	-42.7"
TRAJ: 600 yd. zero	-1.5"	27.2"	47.1"	56.3"	53.4"	35.6"	0.0"
VELOCITY (fps)	2100	1929	1768	1620	1474	1341	1227
ENERGY (ft. lbs.)	2155	1818	1527	1282	1062	879	736
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.2"	-27.8"	-61.0"	-111.1"	-180.1"
TRAJ: 200 yd. zero	-1.5"	4.1"	0.0"	-15.4"	-44.5"	-90.4"	-155.3"
TRAJ: 300 yd. zero	-1.5"	9.3"	10.3"	0.0"	-23.9"	-64.6"	-124.4"
TRAJ: 400 yd. zero	-1.5"	15.3"	22.3"	17.9"	0.0"	-34.7"	-88.5"
TRAJ: 500 yd. zero	-1.5"	22.2"	36.2"	38.8"	27.8"	0.0"	-46.8"
TRAJ: 600 yd. zero	-1.5"	30.0"	51.8"	62.2"	59.0"	39.0"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2000	1835	1681	1540	1401	1278	1176
ENERGY (ft. lbs.)	1955	1645	1380	1159	959	798	676
TRAJ: 100 yd. zero	-1.5"	0.0"	-9.0"	-31.1"	-67.9"	-123.2"	-199.1"
TRAJ: 200 yd. zero	-1.5"	4.5"	0.0"	-17.5"	-49.9"	-100.8"	-172.0"
TRAJ: 300 yd. zero	-1.5"	10.4"	11.7"	0.0"	-26.4"	-71.3"	-136.9"
TRAJ: 400 yd. zero	-1.5"	17.0"	25.0"	19.8"	0.0"	-38.3"	-97.2"
TRAJ: 500 yd. zero	-1.5"	24.8"	40.3"	42.8"	30.6"	0.0"	-51.2"
TRAJ: 600 yd. zero	-1.5"	33.2"	57.4"	68.5"	64.8"	42.7"	0.0"

### 338 CALIBER (.338" Dia.) 200 GRAIN SPIRE POINT

SECTIONAL DENSITY: .250 BALLISTIC COEFFICIENT: .403

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	2950	2711	2483	2270	2069	1882
ENERGY (ft. lbs.)	4549	3865	3264	2740	2289	1902	1573
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.5"	-9.9"	-23.0"	-43.3"	-71.7"
TRAJ: 200 yd. zero	-1.5"	1.3"	0.0"	-6.1"	-17.9"	-36.9"	-64.1"
TRAJ: 300 yd. zero	-1.5"	3.3"	4.1"	0.0"	-9.7"	-26.7"	-51.8"
TRAJ: 400 yd. zero	-1.5"	5.8"	9.0"	7.3"	0.0"	-14.5"	-37.1"
TRAJ: 500 yd. zero	-1.5"	8.7"	14.8"	16.1"	11.6"	0.0"	-19.7"
TRAJ: 600 yd. zero	-1.5"	12.0"	21.4"	25.9"	24.8"	16.5"	0.0"
VELOCITY (fps)	3100	2854	2620	2398	2189	1994	1811
ENERGY (ft. lbs.)	4269	3619	3048	2554	2129	1766	1457
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.8"	-10.8"	-25.0"	-46.9"	-77.5"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.6"	-19.4"	-39.8"	-69.1"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.4"	0.0"	-10.5"	-28.8"	-55.8"
TRAJ: 400 yd. zero	-1.5"	6.3"	9.7"	7.9"	0.0"	-15.6"	-40.0"
TRAJ: 500 yd. zero	-1.5"	9.4"	16.0"	17.3"	12.5"	0.0"	-21.2"
TRAJ: 600 yd. zero	-1.5"	12.9"	23.0"	27.9"	26.7"	17.7"	0.0"
VELOCITY (fps)	3000	2759	2529	2312	2109	1919	1742
ENERGY (ft. lbs.)	3998	3381	2841	2375	1976	1636	1347
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.1"	-11.8"	-27.2"	-50.8"	-84.0"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-7.2"	-20.9"	-43.1"	-74.7"
TRAJ: 300 yd. zero	-1.5"	4.0"	4.8"	0.0"	-11.3"	-31.1"	-60.3"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.5"	8.5"	0.0"	-16.8"	-43.2"
TRAJ: 500 yd. zero	-1.5"	10.2"	17.2"	18.7"	13.5"	0.0"	-22.9"
TRAJ: 600 yd. zero	-1.5"	14.0"	24.9"	30.2"	28.8"	19.2"	0.0"
VELOCITY (fps)	2900	2663	2439	2228	2030	1845	1674
ENERGY (ft. lbs.)	3736	3151	2642	2205	1830	1512	1244
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.4"	-13.0"	-29.6"	-55.3"	-91.5"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.8"	-22.7"	-46.7"	-81.1"
TRAJ: 300 yd. zero	-1.5"	4.3"	5.2"	0.0"	-12.3"	-33.6"	-65.4"
TRAJ: 400 yd. zero	-1.5"	7.4"	11.4"	9.2"	0.0"	-18.2"	-46.9"
TRAJ: 500 yd. zero	-1.5"	11.1"	18.7"	20.2"	14.6"	0.0"	-25.0"
TRAJ: 600 yd. zero	-1.5"	15.3"	27.1"	32.7"	31.3"	20.9"	0.0"
VELOCITY (fps)	2800	2568	2349	2144	1951	1772	1607
ENERGY (ft. lbs.)	3483	2929	2451	2041	1691	1394	1147
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-14.3"	-32.4"	-59.6"	-97.9"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.5"	-24.7"	-50.0"	-86.4"
TRAJ: 300 yd. zero	-1.5"	4.8"	5.7"	0.0"	-13.3"	-35.7"	-69.3"
TRAJ: 400 yd. zero	-1.5"	8.1"	12.4"	10.0"	0.0"	-19.0"	-49.2"
TRAJ: 500 yd. zero	-1.5"	11.9"	20.0"	21.5"	15.2"	0.0"	-26.4"
TRAJ: 600 yd. zero	-1.5"	16.3"	28.8"	34.7"	32.9"	22.0"	0.0"
VELOCITY (fps)	2700	2473	2260	2060	1873	1700	1542
ENERGY (ft. lbs.)	3238	2717	2269	1886	1559	1283	1056
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-15.4"	-35.1"	-64.7"	-106.8"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-8.9"	-26.5"	-54.0"	-93.8"
TRAJ: 300 yd. zero	-1.5"	5.1"	6.0"	0.0"	-14.5"	-39.0"	-75.9"
TRAJ: 400 yd. zero	-1.5"	8.8"	13.3"	10.9"	0.0"	-20.8"	-54.1"
TRAJ: 500 yd. zero	-1.5"	13.0"	21.6"	23.4"	16.7"	0.0"	-29.0"
TRAJ: 600 yd. zero	-1.5"	17.8"	31.3"	38.0"	36.1"	24.2"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2379	2172	1978	1796	1629	1468
ENERGY (ft. lbs.)	3003	2515	2096	1737	1433	1179	958
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 17.0"	- 38.6"	- 71.3"	- 117.0"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 9.8"	- 29.0"	- 59.3"	- 102.6"
TRAJ: 300 yd. zero	- 1.5"	5.7"	6.6"	0.0"	- 15.8"	- 42.9"	- 82.9"
TRAJ: 400 yd. zero	- 1.5"	9.7"	14.5"	11.9"	0.0"	- 23.0"	- 59.1"
TRAJ: 500 yd. zero	- 1.5"	14.3"	23.7"	25.8"	18.5"	0.0"	- 31.4"
TRAJ: 600 yd. zero	- 1.5"	19.5"	34.2"	41.5"	39.4"	26.2"	0.0"
VELOCITY (fps)	2500	2285	2084	1895	1720	1560	1406
ENERGY (ft. lbs.)	2776	2320	1929	1596	1314	1081	878
TRAJ: 100 yds. zero	- 1.5"	0.0"	- 5.3"	- 18.8"	- 42.6"	- 77.8"	- 127.4"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 10.7"	- 31.9"	- 64.4"	- 111.3"
TRAJ: 300 yd. zero	- 1.5"	6.3"	7.2"	0.0"	- 17.5"	- 46.4"	- 89.7"
TRAJ: 400 yd. zero	- 1.5"	10.7"	16.0"	13.1"	0.0"	- 24.5"	- 63.4"
TRAJ: 500 yd. zero	- 1.5"	15.6"	25.8"	27.8"	19.6"	0.0"	- 34.0"
TRAJ: 600 yd. zero	- 1.5"	21.2"	37.1"	44.9"	42.3"	28.4"	0.0"

**338 CALIBER (.338" Dia.) 200 GRAIN FLAT POINT**

SECTIONAL DENSITY: .250 BALLISTIC COEFFICIENT: .200

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2200	2003	1818	1648	1484	1337	1212
ENERGY (ft. lbs.)	2150	1781	1468	1206	978	794	653
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .8"	- 4.0"	- 10.6"	- 21.2"	- 36.6"
TRAJ: 100 yd. zero	- 1.5"	.3"	0.0"	- 2.9"	- 9.2"	- 19.4"	- 34.5"
TRAJ: 150 yd. zero	- 1.5"	1.3"	2.0"	0.0"	- 5.2"	- 14.4"	- 28.5"
TRAJ: 200 yd. zero	- 1.5"	2.7"	4.6"	4.0"	0.0"	- 7.8"	- 20.6"
TRAJ: 250 yd. zero	- 1.5"	4.2"	7.8"	8.7"	6.3"	0.0"	- 11.2"
TRAJ: 300 yd. zero	- 1.5"	6.1"	11.5"	14.3"	13.8"	9.3"	0.0"
VELOCITY (fps)	2100	1909	1731	1569	1413	1276	1165
ENERGY (ft. lbs.)	1959	1619	1331	1094	887	723	603
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .9"	- 4.9"	- 12.4"	- 24.3"	- 41.6"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.4"	- 10.5"	- 21.9"	- 38.8"
TRAJ: 150 yd. zero	- 1.5"	1.6"	2.3"	0.0"	- 5.8"	- 16.0"	- 31.8"
TRAJ: 200 yd. zero	- 1.5"	3.1"	5.3"	4.4"	0.0"	- 8.7"	- 23.0"
TRAJ: 250 yd. zero	- 1.5"	4.9"	8.8"	9.7"	7.0"	0.0"	- 12.5"
TRAJ: 300 yd. zero	- 1.5"	6.9"	12.9"	15.9"	15.3"	10.4"	0.0"
VELOCITY (fps)	2000	1816	1646	1482	1335	1211	1112
ENERGY (ft. lbs.)	1777	1464	1203	976	792	651	549
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.1"	- 5.6"	- 14.0"	- 27.4"	- 46.5"
TRAJ: 100 yd. zero	- 1.5"	.6"	0.0"	- 3.8"	- 11.7"	- 24.5"	- 43.0"
TRAJ: 150 yd. zero	- 1.5"	1.9"	2.6"	0.0"	- 6.5"	- 18.0"	- 35.3"
TRAJ: 200 yd. zero	- 1.5"	3.5"	5.9"	4.9"	0.0"	- 9.8"	- 25.4"
TRAJ: 250 yd. zero	- 1.5"	5.5"	9.8"	10.8"	7.9"	0.0"	- 13.6"
TRAJ: 300 yd. zero	- 1.5"	7.8"	14.4"	17.7"	17.0"	11.4"	0.0"
VELOCITY (fps)	1900	1723	1562	1406	1270	1160	1074
ENERGY (ft. lbs.)	1604	1319	1084	878	716	598	512
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.5"	- 6.7"	- 16.4"	- 31.4"	- 52.6"
TRAJ: 100 yd. zero	- 1.5"	.8"	0.0"	- 4.4"	- 13.3"	- 27.5"	- 47.9"
TRAJ: 150 yd. zero	- 1.5"	2.3"	3.0"	0.0"	- 7.4"	- 20.1"	- 39.1"
TRAJ: 200 yd. zero	- 1.5"	4.1"	6.7"	5.6"	0.0"	- 10.8"	- 27.9"
TRAJ: 250 yd. zero	- 1.5"	6.3"	11.0"	12.1"	8.7"	0.0"	- 14.9"
TRAJ: 300 yd. zero	- 1.5"	8.8"	16.0"	19.6"	18.7"	12.4"	0.0"
VELOCITY (fps)	1800	1632	1469	1324	1202	1105	1030
ENERGY (ft. lbs.)	1439	1183	959	778	642	542	471
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.8"	- 7.7"	- 18.7"	- 35.5"	- 58.8"
TRAJ: 100 yd. zero	- 1.5"	.9"	0.0"	- 5.0"	- 15.1"	- 31.0"	- 53.4"
TRAJ: 150 yd. zero	- 1.5"	2.6"	3.4"	0.0"	- 8.3"	- 22.5"	- 43.2"
TRAJ: 200 yd. zero	- 1.5"	4.7"	7.6"	6.3"	0.0"	- 12.1"	- 30.7"
TRAJ: 250 yd. zero	- 1.5"	7.1"	12.4"	13.5"	9.7"	0.0"	- 16.2"
TRAJ: 300 yd. zero	- 1.5"	9.8"	17.8"	21.6"	20.5"	13.5"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1700	1541	1388	1254	1149	1065	997
ENERGY (ft. lbs.)	1284	1055	855	699	586	503	442
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.2"	-9.1"	-21.8"	-40.7"	-66.6"
TRAJ: 100 yd. zero	-1.5"	1.1"	0.0"	-5.7"	-17.2"	-35.0"	-59.8"
TRAJ: 150 yd. zero	-1.5"	3.1"	3.9"	0.0"	-9.5"	-25.4"	-48.3"
TRAJ: 200 yd. zero	-1.5"	5.5"	8.6"	7.2"	0.0"	-13.4"	-33.9"
TRAJ: 250 yd. zero	-1.5"	8.1"	14.0"	15.3"	10.8"	0.0"	-17.8"
TRAJ: 300 yd. zero	-1.5"	11.1"	20.0"	24.2"	22.6"	14.8"	0.0"
VELOCITY (fps)	1800	1441	1299	1183	1090	1018	959
ENERGY (ft. lbs.)	1137	922	750	621	528	461	408
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.7"	-10.7"	-24.8"	-45.8"	-74.8"
TRAJ: 100 yd. zero	-1.5"	1.4"	0.0"	-6.6"	-19.2"	-38.9"	-66.5"
TRAJ: 150 yd. zero	-1.5"	3.6"	4.4"	0.0"	-10.4"	-27.9"	-53.3"
TRAJ: 200 yd. zero	-1.5"	6.2"	9.6"	7.8"	0.0"	-14.8"	-37.6"
TRAJ: 250 yd. zero	-1.5"	9.2"	15.6"	16.8"	11.9"	0.0"	-19.8"
TRAJ: 300 yd. zero	-1.5"	12.5"	22.2"	26.7"	25.1"	16.5"	0.0"

### 338 CALIBER (.338" Dia.) 225 GRAIN SPIRE POINT

SECTIONAL DENSITY: .281 BALLISTIC COEFFICIENT: .448

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3000	2782	2574	2376	2189	2013	1847
ENERGY (ft. lbs.)	4498	3869	3311	2822	2395	2025	1705
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.5"	-26.3"	-48.7"	-80.0"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.9"	-20.2"	-41.0"	-70.8"
TRAJ: 300 yd. zero	-1.5"	3.8"	4.6"	0.0"	-10.9"	-29.5"	-57.0"
TRAJ: 400 yd. zero	-1.5"	6.8"	10.1"	8.2"	0.0"	-15.8"	-40.5"
TRAJ: 500 yd. zero	-1.5"	9.7"	16.4"	17.7"	12.6"	0.0"	-21.5"
TRAJ: 600 yd. zero	-1.5"	13.3"	23.6"	28.5"	27.0"	18.0"	0.0"
VELOCITY (fps)	2900	2687	2483	2290	2108	1936	1775
ENERGY (ft. lbs.)	4203	3607	3080	2620	2220	1874	1574
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.5"	-28.6"	-52.7"	-86.5"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.4"	-21.8"	-44.3"	-76.4"
TRAJ: 300 yd. zero	-1.5"	4.2"	5.0"	0.0"	-11.8"	-31.8"	-61.4"
TRAJ: 400 yd. zero	-1.5"	7.2"	10.9"	8.9"	0.0"	-17.0"	-43.6"
TRAJ: 500 yd. zero	-1.5"	10.6"	17.7"	19.1"	13.6"	0.0"	-23.2"
TRAJ: 600 yd. zero	-1.5"	14.4"	25.5"	30.7"	29.1"	19.4"	0.0"
VELOCITY (fps)	2800	2591	2392	2204	2027	1860	1704
ENERGY (ft. lbs.)	3918	3354	2859	2428	2053	1729	1451
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.7"	-13.7"	-31.1"	-57.3"	-94.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.1"	-23.6"	-47.9"	-82.8"
TRAJ: 300 yd. zero	-1.5"	4.6"	5.4"	0.0"	-12.8"	-34.3"	-66.5"
TRAJ: 400 yd. zero	-1.5"	7.8"	11.8"	9.6"	0.0"	-18.3"	-47.3"
TRAJ: 500 yd. zero	-1.5"	11.5"	19.2"	20.6"	14.7"	0.0"	-25.3"
TRAJ: 600 yd. zero	-1.5"	15.7"	27.6"	33.3"	31.6"	21.1"	0.0"
VELOCITY (fps)	2700	2495	2302	2119	1947	1785	1635
ENERGY (ft. lbs.)	3643	3112	2648	2244	1894	1592	1336
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.1"	-15.1"	-34.0"	-62.4"	-101.4"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-25.6"	-51.9"	-88.8"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.9"	0.0"	-13.8"	-37.2"	-71.2"
TRAJ: 400 yd. zero	-1.5"	8.5"	12.8"	10.4"	0.0"	-19.8"	-50.3"
TRAJ: 500 yd. zero	-1.5"	12.5"	20.8"	22.3"	15.9"	0.0"	-26.5"
TRAJ: 600 yd. zero	-1.5"	16.9"	29.6"	35.6"	33.6"	22.1"	0.0"
VELOCITY (fps)	2600	2401	2213	2035	1868	1711	1567
ENERGY (ft. lbs.)	3378	2880	2446	2069	1743	1463	1228
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.6"	-16.6"	-37.2"	-68.3"	-111.1"
TRAJ: 200 yd. zero	-1.5"	2.3"	0.0"	-9.6"	-27.9"	-56.8"	-97.1"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.4"	0.0"	-15.0"	-40.6"	-77.9"
TRAJ: 400 yd. zero	-1.5"	9.3"	14.0"	11.3"	0.0"	-21.7"	-55.2"
TRAJ: 500 yd. zero	-1.5"	13.7"	22.7"	24.4"	17.4"	0.0"	-29.1"
TRAJ: 600 yd. zero	-1.5"	18.5"	32.4"	39.0"	36.9"	24.3"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2306	2123	1951	1788	1638	1491
ENERGY (ft. lbs.)	3123	2658	2253	1902	1598	1341	1111
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.1"	-18.3"	-40.8"	-75.1"	-121.6"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-10.5"	-30.5"	-62.2"	-106.0"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.0"	0.0"	-18.4"	-44.8"	-84.9"
TRAJ: 400 yd. zero	-1.5"	10.2"	15.3"	12.3"	0.0"	-24.0"	-60.2"
TRAJ: 500 yd. zero	-1.5"	15.0"	24.9"	26.8"	19.3"	0.0"	-31.3"
TRAJ: 600 yd. zero	-1.5"	20.3"	35.4"	42.5"	40.2"	26.2"	0.0"
VELOCITY (fps)	2400	2212	2034	1867	1710	1567	1426
ENERGY (ft. lbs.)	2878	2445	2068	1742	1462	1227	1016
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.8"	-20.2"	-45.2"	-81.9"	-133.2"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.5"	-33.6"	-67.4"	-115.8"
TRAJ: 300 yd. zero	-1.5"	6.8"	7.7"	0.0"	-18.1"	-48.2"	-92.6"
TRAJ: 400 yd. zero	-1.5"	11.3"	16.8"	13.6"	0.0"	-25.4"	-65.4"
TRAJ: 500 yd. zero	-1.5"	16.4"	27.0"	28.9"	20.4"	0.0"	-34.8"
TRAJ: 600 yd. zero	-1.5"	22.2"	38.6"	46.3"	43.6"	29.0"	0.0"

### 338 CALIBER (.338" Dia.) 250 GRAIN ROUND NOSE

SECTIONAL DENSITY: .313 BALLISTIC COEFFICIENT: .284

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2587	2261	1981	1727	1494	1295
ENERGY (ft. lbs.)	4870	3660	2839	2180	1657	1240	931
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.9"	-14.6"	-34.4"	-66.0"	-113.1"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.7"	-26.5"	-56.2"	-101.3"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.9"	0.0"	-14.8"	-41.8"	-83.8"
TRAJ: 400 yd. zero	-1.5"	8.6"	13.3"	11.2"	0.0"	-23.0"	-61.5"
TRAJ: 500 yd. zero	-1.5"	13.2"	22.5"	25.0"	18.4"	0.0"	-33.8"
TRAJ: 600 yd. zero	-1.5"	18.9"	33.8"	41.9"	41.0"	28.2"	0.0"
VELOCITY (fps)	2800	2475	2176	1904	1659	1435	1247
ENERGY (ft. lbs.)	4353	3400	2630	2013	1528	1143	864
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.2"	-16.1"	-37.9"	-72.3"	-124.0"
TRAJ: 200 yd. zero	-1.5"	2.1"	0.0"	-9.6"	-29.4"	-61.6"	-111.1"
TRAJ: 300 yd. zero	-1.5"	5.4"	6.5"	0.0"	-16.4"	-45.4"	-91.7"
TRAJ: 400 yd. zero	-1.5"	9.5"	14.7"	12.4"	0.0"	-24.8"	-67.0"
TRAJ: 500 yd. zero	-1.5"	14.5"	24.7"	27.3"	19.9"	0.0"	-37.1"
TRAJ: 600 yd. zero	-1.5"	20.7"	37.1"	45.9"	44.7"	31.0"	0.0"
VELOCITY (fps)	2700	2382	2092	1827	1591	1377	1202
ENERGY (ft. lbs.)	4048	3152	2430	1854	1406	1052	803
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.8"	-17.6"	-41.3"	-78.5"	-133.9"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-10.3"	-31.7"	-66.4"	-119.4"
TRAJ: 300 yd. zero	-1.5"	5.9"	6.9"	0.0"	-17.8"	-49.1"	-98.7"
TRAJ: 400 yd. zero	-1.5"	10.3"	15.9"	13.4"	0.0"	-26.8"	-71.9"
TRAJ: 500 yd. zero	-1.5"	15.7"	26.6"	29.5"	21.4"	0.0"	-39.7"
TRAJ: 600 yd. zero	-1.5"	22.3"	39.8"	49.4"	47.9"	33.1"	0.0"
VELOCITY (fps)	2600	2291	2008	1752	1516	1312	1157
ENERGY (ft. lbs.)	3754	2914	2240	1704	1275	956	743
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.2"	-19.4"	-45.0"	-86.1"	-147.1"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-11.5"	-34.4"	-72.9"	-131.3"
TRAJ: 300 yd. zero	-1.5"	6.5"	7.7"	0.0"	-19.1"	-53.6"	-108.2"
TRAJ: 400 yd. zero	-1.5"	11.3"	17.2"	14.3"	0.0"	-29.8"	-79.6"
TRAJ: 500 yd. zero	-1.5"	17.2"	29.2"	32.2"	23.8"	0.0"	-43.8"
TRAJ: 600 yd. zero	-1.5"	24.5"	43.8"	54.1"	53.1"	36.5"	0.0"
VELOCITY (fps)	2500	2199	1925	1677	1451	1260	1116
ENERGY (ft. lbs.)	3470	2686	2058	1562	1169	882	692
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.7"	-21.2"	-49.1"	-93.8"	-159.6"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-12.5"	-37.5"	-79.3"	-142.2"
TRAJ: 300 yd. zero	-1.5"	7.1"	8.4"	0.0"	-20.8"	-58.4"	-117.1"
TRAJ: 400 yd. zero	-1.5"	12.3"	18.8"	15.6"	0.0"	-32.3"	-85.9"
TRAJ: 500 yd. zero	-1.5"	18.8"	31.7"	35.1"	25.9"	0.0"	-47.0"
TRAJ: 600 yd. zero	-1.5"	26.6"	47.4"	58.6"	57.3"	39.2"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2400	2108	1842	1604	1388	1211	1084
ENERGY (ft. lbs.)	3198	2467	1884	1429	1069	814	652
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.5"	-23.6"	-54.3"	-102.9"	-173.7"
TRAJ: 200 yd. zero	-1.5"	3.3"	0.0"	-13.7"	-41.1"	-86.4"	-154.0"
TRAJ: 300 yd. zero	-1.5"	7.9"	9.2"	0.0"	-22.7"	-63.5"	-126.4"
TRAJ: 400 yd. zero	-1.5"	13.6"	20.6"	17.1"	0.0"	-35.0"	-92.2"
TRAJ: 500 yd. zero	-1.5"	20.6"	34.6"	38.1"	28.0"	0.0"	-50.2"
TRAJ: 600 yd. zero	-1.5"	29.0"	51.3"	63.2"	61.5"	41.9"	0.0"

### 348 CALIBER (.348" Dia.) 200 GRAIN FLAT POINT

SECTIONAL DENSITY: .238 BALLISTIC COEFFICIENT: .283

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2500	2334	2176	2026	1884	1748	1623
ENERGY (ft. lbs.)	2776	2420	2104	1824	1576	1358	1170
TRAJ: 50 yd. zero	-1.5"	0.0"	-.1"	-2.2"	-6.4"	-13.3"	-23.2"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.0"	-6.1"	-13.0"	-22.8"
TRAJ: 150 yd. zero	-1.5"	.7"	1.3"	0.0"	-3.4"	-9.6"	-18.7"
TRAJ: 200 yd. zero	-1.5"	1.6"	3.1"	2.6"	0.0"	-5.2"	-13.5"
TRAJ: 250 yd. zero	-1.5"	2.7"	5.2"	5.8"	4.2"	0.0"	-7.2"
TRAJ: 300 yd. zero	-1.5"	3.9"	7.6"	9.4"	9.0"	6.0"	0.0"
VELOCITY (fps)	2400	2239	2086	1940	1802	1672	1552
ENERGY (ft. lbs.)	2559	2227	1933	1672	1442	1242	1070
TRAJ: 50 yd. zero	-1.5"	0.0"	-.2"	-2.6"	-7.3"	-14.7"	-25.6"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.2"	-6.8"	-14.0"	-24.8"
TRAJ: 150 yd. zero	-1.5"	.9"	1.5"	0.0"	-3.8"	-10.3"	-20.3"
TRAJ: 200 yd. zero	-1.5"	1.8"	3.4"	2.9"	0.0"	-5.5"	-14.5"
TRAJ: 250 yd. zero	-1.5"	3.0"	5.6"	6.2"	4.4"	0.0"	-7.9"
TRAJ: 300 yd. zero	-1.5"	4.3"	8.3"	10.2"	9.7"	6.6"	0.0"
VELOCITY (fps)	2300	2144	1995	1854	1721	1597	1472
ENERGY (ft. lbs.)	2350	2042	1768	1527	1315	1133	963
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.1"	-8.4"	-16.7"	-28.3"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.5"	-7.6"	-15.6"	-27.0"
TRAJ: 150 yd. zero	-1.5"	1.1"	1.7"	0.0"	-4.2"	-11.4"	-22.0"
TRAJ: 200 yd. zero	-1.5"	2.1"	3.8"	3.2"	0.0"	-6.1"	-15.6"
TRAJ: 250 yd. zero	-1.5"	3.3"	6.3"	6.9"	4.9"	0.0"	-8.3"
TRAJ: 300 yd. zero	-1.5"	4.7"	9.0"	11.0"	10.5"	6.9"	0.0"
VELOCITY (fps)	2200	2049	1905	1768	1641	1513	1395
ENERGY (ft. lbs.)	2150	1884	1612	1389	1196	1017	864
TRAJ: 50 yd. zero	-1.5"	0.0"	-.6"	-3.7"	-9.7"	-19.0"	-32.2"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.8"	-8.5"	-17.5"	-30.4"
TRAJ: 150 yd. zero	-1.5"	1.3"	1.9"	0.0"	-4.7"	-12.8"	-24.7"
TRAJ: 200 yd. zero	-1.5"	2.4"	4.3"	3.6"	0.0"	-6.8"	-17.6"
TRAJ: 250 yd. zero	-1.5"	3.8"	7.0"	7.7"	5.5"	0.0"	-9.4"
TRAJ: 300 yd. zero	-1.5"	5.4"	10.2"	12.4"	11.8"	7.8"	0.0"
VELOCITY (fps)	2100	1954	1815	1684	1563	1441	1329
ENERGY (ft. lbs.)	1959	1695	1483	1260	1085	922	784
TRAJ: 50 yd. zero	-1.5"	0.0"	-.8"	-4.4"	-11.3"	-21.6"	-36.2"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.2"	-9.7"	-19.6"	-33.7"
TRAJ: 150 yd. zero	-1.5"	1.5"	2.2"	0.0"	-5.3"	-14.2"	-27.2"
TRAJ: 200 yd. zero	-1.5"	2.8"	4.9"	4.0"	0.0"	-7.4"	-19.1"
TRAJ: 250 yd. zero	-1.5"	4.3"	7.8"	8.5"	6.0"	0.0"	-10.2"
TRAJ: 300 yd. zero	-1.5"	6.0"	11.3"	13.6"	12.8"	8.5"	0.0"

### 35 CALIBER (.358" Dia.) 200 GRAIN SPIRE POINT

SECTIONAL DENSITY: .223 BALLISTIC COEFFICIENT: .295

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2579	2283	2011	1763	1544	1343
ENERGY (ft. lbs.)	3736	2956	2315	1797	1381	1059	801
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.8"	-14.5"	-34.0"	-64.6"	-110.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	0.0"	-8.7"	-26.3"	-54.9"	-98.4"
TRAJ: 300 yd. zero	-1.5"	4.9"	5.9"	0.0"	-14.6"	-40.2"	-80.8"
TRAJ: 400 yd. zero	-1.5"	8.5"	13.2"	11.0"	0.0"	-22.0"	-58.9"
TRAJ: 500 yd. zero	-1.5"	12.9"	22.0"	24.2"	17.6"	0.0"	-32.4"
TRAJ: 600 yd. zero	-1.5"	18.3"	32.8"	40.4"	39.3"	27.1"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2486	2197	1933	1693	1472	1283
ENERGY (ft. lbs.)	3483	2746	2145	1660	1274	963	732
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.2"	- 15.7"	- 36.5"	- 69.7"	- 119.0"
TRAJ: 200 yd. zero	- 1.5"	2.1"	0.0"	- 9.3"	- 28.1"	- 59.2"	- 106.3"
TRAJ: 300 yd. zero	- 1.5"	5.2"	6.3"	0.0"	- 15.6"	- 43.6"	- 87.5"
TRAJ: 400 yd. zero	- 1.5"	9.1"	14.1"	11.7"	0.0"	- 24.1"	- 64.1"
TRAJ: 500 yd. zero	- 1.5"	14.0"	23.7"	26.2"	19.3"	0.0"	- 35.2"
TRAJ: 600 yd. zero	- 1.5"	19.8"	35.5"	43.8"	42.8"	29.4"	0.0"
VELOCITY (fps)	2700	2394	2113	1856	1625	1413	1235
ENERGY (ft. lbs.)	3238	2545	1983	1530	1172	886	678
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.5"	- 40.7"	- 76.9"	- 130.3"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.3"	- 31.2"	- 65.0"	- 116.0"
TRAJ: 300 yd. zero	- 1.5"	5.8"	6.9"	0.0"	- 17.3"	- 47.7"	- 95.3"
TRAJ: 400 yd. zero	- 1.5"	10.2"	15.6"	13.0"	0.0"	- 26.0"	- 69.2"
TRAJ: 500 yd. zero	- 1.5"	15.4"	26.0"	28.7"	20.8"	0.0"	- 38.0"
TRAJ: 600 yd. zero	- 1.5"	21.7"	38.7"	47.7"	46.2"	31.7"	0.0"
VELOCITY (fps)	2600	2302	2029	1779	1557	1354	1191
ENERGY (ft. lbs.)	3003	2354	1828	1406	1077	815	630
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 18.9"	- 44.0"	- 83.6"	- 142.3"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.1"	- 33.6"	- 70.7"	- 126.7"
TRAJ: 300 yd. zero	- 1.5"	6.3"	7.4"	0.0"	- 18.8"	- 52.1"	- 104.5"
TRAJ: 400 yd. zero	- 1.5"	11.0"	16.8"	14.1"	0.0"	- 28.5"	- 76.2"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.3"	31.3"	22.9"	0.0"	- 41.9"
TRAJ: 600 yd. zero	- 1.5"	23.7"	42.3"	52.3"	50.8"	34.9"	0.0"
VELOCITY (fps)	2500	2210	1945	1703	1481	1291	1146
ENERGY (ft. lbs.)	2776	2170	1680	1289	975	740	583
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.8"	- 21.2"	- 48.5"	- 92.1"	- 155.5"
TRAJ: 200 yd. zero	- 1.5"	2.9"	0.0"	- 12.4"	- 36.7"	- 77.4"	- 137.8"
TRAJ: 300 yd. zero	- 1.5"	7.1"	8.3"	0.0"	- 20.1"	- 56.6"	- 113.0"
TRAJ: 400 yd. zero	- 1.5"	12.1"	18.4"	15.1"	0.0"	- 31.4"	- 82.7"
TRAJ: 500 yd. zero	- 1.5"	18.4"	31.0"	34.0"	25.1"	0.0"	- 45.0"
TRAJ: 600 yd. zero	- 1.5"	25.9"	46.0"	56.5"	55.1"	37.5"	0.0"
VELOCITY (fps)	2400	2118	1861	1629	1417	1238	1106
ENERGY (ft. lbs.)	2559	1993	1538	1179	891	681	543
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.4"	- 23.2"	- 53.5"	- 101.2"	- 170.6"
TRAJ: 200 yd. zero	- 1.5"	3.2"	0.0"	- 13.6"	- 40.6"	- 85.1"	- 151.3"
TRAJ: 300 yd. zero	- 1.5"	7.8"	9.1"	0.0"	- 22.4"	- 62.4"	- 124.0"
TRAJ: 400 yd. zero	- 1.5"	13.4"	20.3"	16.8"	0.0"	- 34.3"	- 90.3"
TRAJ: 500 yd. zero	- 1.5"	20.3"	34.1"	37.5"	27.5"	0.0"	- 49.1"
TRAJ: 600 yd. zero	- 1.5"	28.4"	50.4"	62.0"	60.3"	40.9"	0.0"
VELOCITY (fps)	2300	2027	1777	1556	1353	1190	1073
ENERGY (ft. lbs.)	2350	1825	1403	1076	813	629	511
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.0"	- 25.6"	- 58.7"	- 111.2"	- 186.0"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 14.9"	- 44.6"	- 93.5"	- 164.7"
TRAJ: 300 yd. zero	- 1.5"	8.5"	10.0"	0.0"	- 24.6"	- 68.5"	- 134.7"
TRAJ: 400 yd. zero	- 1.5"	14.7"	22.3"	18.5"	0.0"	- 37.7"	- 97.8"
TRAJ: 500 yd. zero	- 1.5"	22.3"	37.4"	41.1"	30.2"	0.0"	- 52.5"
TRAJ: 600 yd. zero	- 1.5"	31.0"	54.9"	67.4"	65.2"	43.8"	0.0"
VELOCITY (fps)	2200	1935	1695	1474	1285	1142	1039
ENERGY (ft. lbs.)	2150	1664	1277	985	733	579	479
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.1"	- 28.6"	- 65.1"	- 123.0"	- 205.1"
TRAJ: 200 yd. zero	- 1.5"	4.1"	0.0"	- 16.3"	- 48.7"	- 102.6"	- 180.6"
TRAJ: 300 yd. zero	- 1.5"	9.5"	10.9"	0.0"	- 26.9"	- 75.4"	- 147.9"
TRAJ: 400 yd. zero	- 1.5"	16.3"	24.4"	20.2"	0.0"	- 41.6"	- 107.5"
TRAJ: 500 yd. zero	- 1.5"	24.6"	41.1"	45.2"	33.3"	0.0"	- 57.4"
TRAJ: 600 yd. zero	- 1.5"	34.2"	60.2"	74.0"	71.7"	47.9"	0.0"
VELOCITY (fps)	2100	1844	1614	1404	1228	1099	1007
ENERGY (ft. lbs.)	1959	1511	1158	875	670	536	451
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.8"	- 31.4"	- 72.1"	- 134.7"	- 223.9"
TRAJ: 200 yd. zero	- 1.5"	4.4"	0.0"	- 18.1"	- 54.4"	- 112.5"	- 197.3"
TRAJ: 300 yd. zero	- 1.5"	10.5"	12.1"	0.0"	- 30.2"	- 82.2"	- 161.0"
TRAJ: 400 yd. zero	- 1.5"	18.0"	27.2"	22.7"	0.0"	- 44.5"	- 115.7"
TRAJ: 500 yd. zero	- 1.5"	26.9"	45.0"	49.4"	35.6"	0.0"	- 62.3"
TRAJ: 600 yd. zero	- 1.5"	37.3"	65.8"	80.5"	77.2"	51.9"	0.0"



**35 CALIBER (.358" Dia.) 200 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .223 BALLISTIC COEFFICIENT: .180

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2900	2636	2387	2155	1940	1741	1561
ENERGY (ft. lbs.)	3736	3086	2531	2084	1672	1346	1082
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.1"	-4.4"	-9.9"	-18.4"
TRAJ: 100 yd. zero	-1.5"	-.1"	0.0"	-1.4"	-4.8"	-10.5"	-19.1"
TRAJ: 150 yd. zero	-1.5"	.4"	1.0"	0.0"	-2.9"	-8.1"	-16.1"
TRAJ: 200 yd. zero	-1.5"	1.1"	2.4"	2.2"	0.0"	-4.4"	-11.7"
TRAJ: 250 yd. zero	-1.5"	2.0"	4.2"	4.9"	3.6"	0.0"	-6.4"
TRAJ: 300 yd. zero	-1.5"	3.1"	6.4"	8.1"	7.9"	5.4"	0.0"
VELOCITY (fps)	2800	2541	2299	2073	1864	1671	1489
ENERGY (ft. lbs.)	3483	2888	2348	1910	1543	1241	985
TRAJ: 50 yd. zero	-1.5"	0.0"	.1"	-1.4"	-5.0"	-11.2"	-20.6"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.6"	-5.3"	-11.5"	-21.0"
TRAJ: 150 yd. zero	-1.5"	.5"	1.1"	0.0"	-3.1"	-8.8"	-17.6"
TRAJ: 200 yd. zero	-1.5"	1.3"	2.7"	2.3"	0.0"	-4.9"	-13.0"
TRAJ: 250 yd. zero	-1.5"	2.3"	4.6"	5.3"	3.9"	0.0"	-7.1"
TRAJ: 300 yd. zero	-1.5"	3.4"	7.0"	8.8"	8.7"	5.9"	0.0"
VELOCITY (fps)	2700	2447	2211	1992	1788	1604	1428
ENERGY (ft. lbs.)	3238	2680	2172	1783	1421	1142	906
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-1.7"	-5.8"	-12.5"	-22.7"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.7"	-5.8"	-12.5"	-22.7"
TRAJ: 150 yd. zero	-1.5"	.6"	1.2"	0.0"	-3.4"	-9.5"	-19.2"
TRAJ: 200 yd. zero	-1.5"	1.5"	2.9"	2.6"	0.0"	-5.2"	-14.0"
TRAJ: 250 yd. zero	-1.5"	2.5"	5.0"	5.7"	4.2"	0.0"	-7.7"
TRAJ: 300 yd. zero	-1.5"	3.8"	7.6"	9.6"	9.4"	6.4"	0.0"
VELOCITY (fps)	2600	2354	2124	1911	1714	1537	1389
ENERGY (ft. lbs.)	3003	2481	2005	1623	1306	1050	833
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-2.1"	-6.6"	-14.2"	-25.5"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-2.0"	-6.5"	-14.0"	-25.2"
TRAJ: 150 yd. zero	-1.5"	.7"	1.3"	0.0"	-3.8"	-10.8"	-21.2"
TRAJ: 200 yd. zero	-1.5"	1.7"	3.3"	2.9"	0.0"	-5.8"	-15.4"
TRAJ: 250 yd. zero	-1.5"	2.9"	5.6"	6.4"	4.7"	0.0"	-8.4"
TRAJ: 300 yd. zero	-1.5"	4.3"	8.4"	10.6"	10.3"	7.0"	0.0"
VELOCITY (fps)	2500	2261	2038	1831	1642	1462	1304
ENERGY (ft. lbs.)	2776	2270	1844	1489	1197	950	755
TRAJ: 50 yd. zero	-1.5"	0.0"	-.2"	-2.6"	-7.6"	-15.8"	-28.3"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.2"	-7.1"	-15.2"	-27.6"
TRAJ: 150 yd. zero	-1.5"	.9"	1.5"	0.0"	-4.1"	-11.4"	-23.0"
TRAJ: 200 yd. zero	-1.5"	1.9"	3.6"	3.1"	0.0"	-6.3"	-16.8"
TRAJ: 250 yd. zero	-1.5"	3.2"	6.1"	6.9"	5.1"	0.0"	-9.2"
TRAJ: 300 yd. zero	-1.5"	4.7"	9.2"	11.5"	11.2"	7.7"	0.0"
VELOCITY (fps)	2400	2167	1951	1751	1570	1398	1251
ENERGY (ft. lbs.)	2559	2087	1691	1362	1095	869	695
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.2"	-8.9"	-18.2"	-32.0"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.6"	-8.1"	-17.1"	-30.8"
TRAJ: 150 yd. zero	-1.5"	1.1"	1.7"	0.0"	-4.6"	-12.8"	-25.6"
TRAJ: 200 yd. zero	-1.5"	2.2"	4.1"	3.5"	0.0"	-6.9"	-18.6"
TRAJ: 250 yd. zero	-1.5"	3.6"	6.9"	7.7"	5.6"	0.0"	-10.2"
TRAJ: 300 yd. zero	-1.5"	5.3"	10.3"	12.8"	12.4"	8.5"	0.0"
VELOCITY (fps)	2300	2074	1865	1672	1490	1327	1194
ENERGY (ft. lbs.)	2350	1911	1545	1242	986	783	633
TRAJ: 50 yd. zero	-1.5"	0.0"	-.5"	-3.6"	-9.9"	-20.2"	-35.4"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.8"	-8.9"	-18.8"	-33.8"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.9"	0.0"	-5.0"	-14.0"	-28.1"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.5"	3.8"	0.0"	-7.7"	-20.4"
TRAJ: 250 yd. zero	-1.5"	4.0"	7.5"	8.4"	6.2"	0.0"	-11.2"
TRAJ: 300 yd. zero	-1.5"	5.9"	11.3"	14.1"	13.7"	9.4"	0.0"
VELOCITY (fps)	2200	1981	1779	1595	1421	1269	1151
ENERGY (ft. lbs.)	2150	1744	1405	1130	896	715	588
TRAJ: 50 yd. zero	-1.5"	0.0"	-.7"	-4.3"	-11.3"	-22.7"	-39.5"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.1"	-9.7"	-20.8"	-37.2"
TRAJ: 150 yd. zero	-1.5"	1.4"	2.1"	0.0"	-5.5"	-15.5"	-30.8"
TRAJ: 200 yd. zero	-1.5"	2.8"	4.9"	4.2"	0.0"	-8.5"	-22.5"
TRAJ: 250 yd. zero	-1.5"	4.5"	8.3"	9.3"	6.8"	0.0"	-12.2"
TRAJ: 300 yd. zero	-1.5"	6.6"	12.4"	15.4"	15.0"	10.2"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2100	1889	1894	1509	1344	1207	1101
ENERGY (ft. lbs.)	1959	1584	1274	1011	802	647	538
TRAJ: 50 yd. zero	-1.5"	0.0"	-9"	-4.9"	-12.8"	-25.5"	-43.8"
TRAJ: 100 yd. zero	-1.5"	.5"	0.0"	-3.5"	-10.9"	-23.1"	-40.9"
TRAJ: 150 yd. zero	-1.5"	1.7"	2.4"	0.0"	-6.2"	-17.2"	-33.9"
TRAJ: 200 yd. zero	-1.5"	3.2"	5.5"	4.7"	0.0"	-9.4"	-24.5"
TRAJ: 250 yd. zero	-1.5"	5.1"	9.3"	10.3"	7.8"	0.0"	-13.2"
TRAJ: 300 yd. zero	-1.5"	7.3"	13.7"	17.0"	16.4"	11.0"	0.0"
VELOCITY (fps)	2000	1798	1810	1434	1280	1159	1068
ENERGY (ft. lbs.)	1777	1433	1152	914	728	597	504
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.3"	-6.0"	-15.0"	-29.3"	-49.7"
TRAJ: 100 yd. zero	-1.5"	.7"	0.0"	-4.0"	-12.4"	-26.0"	-45.7"
TRAJ: 150 yd. zero	-1.5"	2.0"	2.7"	0.0"	-7.0"	-19.2"	-37.8"
TRAJ: 200 yd. zero	-1.5"	3.8"	6.2"	5.3"	0.0"	-10.5"	-27.1"
TRAJ: 250 yd. zero	-1.5"	5.9"	10.4"	11.8"	8.4"	0.0"	-14.4"
TRAJ: 300 yd. zero	-1.5"	8.3"	15.2"	18.8"	18.1"	12.1"	0.0"
VELOCITY (fps)	1900	1704	1528	1361	1220	1111	1029
ENERGY (ft. lbs.)	1804	1290	1037	823	662	548	470
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.8"	-6.9"	-17.2"	-32.9"	-55.4"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.5"	-13.9"	-28.9"	-50.5"
TRAJ: 150 yd. zero	-1.5"	2.3"	3.0"	0.0"	-7.9"	-21.3"	-41.4"
TRAJ: 200 yd. zero	-1.5"	4.3"	7.0"	5.9"	0.0"	-11.4"	-29.5"
TRAJ: 250 yd. zero	-1.5"	6.8"	11.8"	12.8"	9.2"	0.0"	-15.8"
TRAJ: 300 yd. zero	-1.5"	9.2"	16.9"	20.7"	19.7"	13.2"	0.0"
VELOCITY (fps)	1800	1614	1438	1283	1181	1087	994
ENERGY (ft. lbs.)	1439	1157	918	731	599	506	439
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.9"	-8.0"	-19.4"	-37.2"	-62.2"
TRAJ: 100 yd. zero	-1.5"	1.0"	0.0"	-5.2"	-15.6"	-32.5"	-56.4"
TRAJ: 150 yd. zero	-1.5"	2.7"	3.5"	0.0"	-8.6"	-23.8"	-46.0"
TRAJ: 200 yd. zero	-1.5"	4.9"	7.8"	6.5"	0.0"	-12.9"	-32.9"
TRAJ: 250 yd. zero	-1.5"	7.5"	13.0"	14.3"	10.3"	0.0"	-17.4"
TRAJ: 300 yd. zero	-1.5"	10.4"	18.8"	23.0"	22.0"	14.6"	0.0"
VELOCITY (fps)	1700	1514	1349	1211	1104	1023	958
ENERGY (ft. lbs.)	1284	1019	808	651	541	465	408
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.4"	-9.7"	-22.7"	-42.8"	-70.0"
TRAJ: 100 yd. zero	-1.5"	1.2"	0.0"	-6.1"	-17.9"	-36.8"	-62.8"
TRAJ: 150 yd. zero	-1.5"	3.2"	4.1"	0.0"	-9.7"	-26.4"	-50.8"
TRAJ: 200 yd. zero	-1.5"	5.7"	9.0"	7.3"	0.0"	-14.2"	-35.9"
TRAJ: 250 yd. zero	-1.5"	8.5"	14.7"	15.9"	11.4"	0.0"	-18.8"
TRAJ: 300 yd. zero	-1.5"	11.7"	21.0"	25.3"	24.0"	15.7"	0.0"
VELOCITY (fps)	1600	1425	1273	1153	1061	990	929
ENERGY (ft. lbs.)	1137	902	720	591	500	435	384
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.8"	-11.0"	-25.6"	-47.8"	-78.1"
TRAJ: 100 yd. zero	-1.5"	1.4"	0.0"	-6.7"	-19.9"	-40.6"	-69.6"
TRAJ: 150 yd. zero	-1.5"	3.7"	4.5"	0.0"	-10.9"	-29.2"	-56.0"
TRAJ: 200 yd. zero	-1.5"	6.4"	10.0"	8.2"	0.0"	-15.6"	-39.8"
TRAJ: 250 yd. zero	-1.5"	9.5"	16.2"	17.6"	12.5"	0.0"	-20.9"
TRAJ: 300 yd. zero	-1.5"	13.0"	23.2"	28.0"	26.5"	17.5"	0.0"

**35 CALIBER (.358" Dia.) 250 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .279 BALLISTIC COEFFICIENT: .244

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2800	2424	2084	1779	1505	1276	1110
ENERGY (ft. lbs.)	4353	3262	2412	1758	1258	905	684
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.4"	-17.1"	-40.7"	-80.0"	-139.8"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.3"	-31.7"	-68.7"	-128.1"
TRAJ: 300 yd. zero	-1.5"	5.7"	6.9"	0.0"	-17.9"	-51.4"	-105.4"
TRAJ: 400 yd. zero	-1.5"	10.2"	15.9"	13.5"	0.0"	-29.0"	-78.4"
TRAJ: 500 yd. zero	-1.5"	16.0"	27.5"	30.9"	23.2"	0.0"	-43.8"
TRAJ: 600 yd. zero	-1.5"	23.3"	42.0"	52.7"	52.3"	36.4"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2333	2002	1707	1444	1229	1080
ENERGY (ft. lbs.)	4048	3022	2226	1618	1158	839	648
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.1"	- 19.2"	- 45.3"	- 87.8"	- 151.7"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.5"	- 35.1"	- 75.0"	- 136.4"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.7"	0.0"	- 19.7"	- 55.8"	- 113.3"
TRAJ: 400 yd. zero	- 1.5"	11.3"	17.6"	14.8"	0.0"	- 31.1"	- 83.7"
TRAJ: 500 yd. zero	- 1.5"	17.6"	30.0"	33.5"	25.0"	0.0"	- 46.3"
TRAJ: 600 yd. zero	- 1.5"	25.3"	45.5"	56.7"	55.9"	38.6"	0.0"
VELOCITY (fps)	2600	2243	1921	1637	1384	1186	1053
ENERGY (ft. lbs.)	3754	2793	2050	1487	1064	781	616
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.6"	- 20.7"	- 49.1"	- 95.8"	- 165.0"
TRAJ: 200 yd. zero	- 1.5"	2.8"	0.0"	- 12.2"	- 37.9"	- 81.7"	- 148.2"
TRAJ: 300 yd. zero	- 1.5"	6.9"	8.2"	0.0"	- 21.5"	- 61.2"	- 123.6"
TRAJ: 400 yd. zero	- 1.5"	12.3"	19.0"	16.2"	0.0"	- 34.3"	- 91.2"
TRAJ: 500 yd. zero	- 1.5"	19.2"	32.7"	36.8"	27.5"	0.0"	- 50.1"
TRAJ: 600 yd. zero	- 1.5"	27.5"	49.4"	61.8"	60.9"	41.8"	0.0"
VELOCITY (fps)	2500	2153	1841	1567	1326	1147	1027
ENERGY (ft. lbs.)	3470	2573	1881	1364	977	730	586
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.2"	- 22.8"	- 53.9"	- 104.2"	- 178.1"
TRAJ: 200 yd. zero	- 1.5"	3.1"	0.0"	- 13.5"	- 41.4"	- 88.7"	- 159.4"
TRAJ: 300 yd. zero	- 1.5"	7.6"	9.0"	0.0"	- 23.4"	- 66.1"	- 132.3"
TRAJ: 400 yd. zero	- 1.5"	13.5"	20.7"	17.6"	0.0"	- 38.8"	- 97.2"
TRAJ: 500 yd. zero	- 1.5"	20.9"	35.5"	39.7"	29.5"	0.0"	- 53.0"
TRAJ: 600 yd. zero	- 1.5"	29.7"	53.2"	66.2"	64.9"	44.2"	0.0"
VELOCITY (fps)	2400	2063	1760	1489	1264	1102	996
ENERGY (ft. lbs.)	3198	2362	1721	1231	887	674	551
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.9"	- 25.1"	- 59.5"	- 114.7"	- 194.9"
TRAJ: 200 yd. zero	- 1.5"	3.5"	0.0"	- 14.8"	- 45.7"	- 97.4"	- 174.2"
TRAJ: 300 yd. zero	- 1.5"	8.4"	9.9"	0.0"	- 25.9"	- 72.7"	- 144.5"
TRAJ: 400 yd. zero	- 1.5"	14.9"	22.9"	19.5"	0.0"	- 40.2"	- 105.5"
TRAJ: 500 yd. zero	- 1.5"	22.9"	39.0"	43.7"	32.2"	0.0"	- 57.2"
TRAJ: 600 yd. zero	- 1.5"	32.5"	58.1"	72.3"	70.4"	47.7"	0.0"
VELOCITY (fps)	2300	1973	1681	1422	1213	1070	973
ENERGY (ft. lbs.)	2937	2161	1570	1123	816	636	526
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.7"	- 27.8"	- 65.2"	- 124.6"	- 210.9"
TRAJ: 200 yd. zero	- 1.5"	3.9"	0.0"	- 16.2"	- 49.8"	- 105.3"	- 187.7"
TRAJ: 300 yd. zero	- 1.5"	9.3"	10.8"	0.0"	- 28.1"	- 78.2"	- 155.2"
TRAJ: 400 yd. zero	- 1.5"	16.3"	24.9"	21.1"	0.0"	- 43.0"	- 113.0"
TRAJ: 500 yd. zero	- 1.5"	24.9"	42.1"	46.9"	34.4"	0.0"	- 61.3"
TRAJ: 600 yd. zero	- 1.5"	35.2"	62.6"	77.6"	75.3"	51.1"	0.0"
VELOCITY (fps)	2200	1883	1604	1356	1167	1041	951
ENERGY (ft. lbs.)	2687	1969	1428	1021	756	601	502
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.4"	- 30.6"	- 71.5"	- 136.7"	- 229.4"
TRAJ: 200 yd. zero	- 1.5"	4.2"	0.0"	- 17.8"	- 54.6"	- 115.5"	- 204.0"
TRAJ: 300 yd. zero	- 1.5"	10.2"	11.9"	0.0"	- 30.7"	- 85.7"	- 168.2"
TRAJ: 400 yd. zero	- 1.5"	17.9"	27.3"	23.1"	0.0"	- 47.2"	- 122.0"
TRAJ: 500 yd. zero	- 1.5"	27.3"	46.2"	51.4"	37.8"	0.0"	- 65.4"
TRAJ: 600 yd. zero	- 1.5"	38.2"	68.0"	84.1"	81.4"	54.5"	0.0"
VELOCITY (fps)	2100	1794	1527	1294	1126	1013	929
ENERGY (ft. lbs.)	2449	1786	1295	930	704	570	479
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 9.6"	- 34.5"	- 80.4"	- 151.0"	- 252.0"
TRAJ: 200 yd. zero	- 1.5"	4.8"	0.0"	- 20.0"	- 61.0"	- 126.8"	- 223.0"
TRAJ: 300 yd. zero	- 1.5"	11.5"	13.4"	0.0"	- 34.3"	- 93.4"	- 182.8"
TRAJ: 400 yd. zero	- 1.5"	20.1"	30.5"	25.7"	0.0"	- 50.5"	- 131.3"
TRAJ: 500 yd. zero	- 1.5"	30.2"	50.7"	56.0"	40.4"	0.0"	- 70.7"
TRAJ: 600 yd. zero	- 1.5"	42.0"	74.3"	91.4"	87.6"	59.0"	0.0"
VELOCITY (fps)	2000	1705	1442	1228	1080	960	899
ENERGY (ft. lbs.)	2221	1614	1155	837	647	533	449
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 10.7"	- 38.3"	- 88.3"	- 165.1"	- 272.5"
TRAJ: 200 yd. zero	- 1.5"	5.4"	0.0"	- 22.2"	- 66.7"	- 138.2"	- 240.2"
TRAJ: 300 yd. zero	- 1.5"	12.8"	14.8"	0.0"	- 37.1"	- 101.1"	- 195.8"
TRAJ: 400 yd. zero	- 1.5"	22.1"	33.4"	27.9"	0.0"	- 54.7"	- 140.0"
TRAJ: 500 yd. zero	- 1.5"	33.0"	55.3"	60.7"	43.8"	0.0"	- 74.3"
TRAJ: 600 yd. zero	- 1.5"	45.4"	80.1"	97.9"	93.4"	62.0"	0.0"



## 375 CALIBER (.375" Dia.) 220 GRAIN FLAT POINT

SECTIONAL DENSITY: .223 BALLISTIC COEFFICIENT: .231

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2300	2123	1955	1798	1651	1507	1374
ENERGY (ft. lbs.)	2585	2202	1868	1579	1332	1109	923
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .4"	- 3.3"	- 8.9"	- 17.7"	- 30.3"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.5"	- 7.9"	- 16.5"	- 28.9"
TRAJ: 150 yd. zero	- 1.5"	1.1"	1.7"	0.0"	- 4.5"	- 12.2"	- 23.7"
TRAJ: 200 yd. zero	- 1.5"	2.2"	4.0"	3.4"	0.0"	- 6.5"	- 16.9"
TRAJ: 250 yd. zero	- 1.5"	3.5"	6.6"	7.3"	5.2"	0.0"	- 9.0"
TRAJ: 300 yd. zero	- 1.5"	5.1"	9.6"	11.9"	11.3"	7.6"	0.0"
VELOCITY (fps)	2200	2028	1866	1714	1575	1437	1312
ENERGY (ft. lbs.)	2365	2010	1702	1436	1212	1009	841
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .6"	- 3.9"	- 10.1"	- 20.0"	- 34.0"
TRAJ: 100 yd. zero	- 1.5"	.3"	0.0"	- 2.9"	- 8.8"	- 18.3"	- 32.0"
TRAJ: 150 yd. zero	- 1.5"	1.3"	2.0"	0.0"	- 4.8"	- 13.4"	- 26.1"
TRAJ: 200 yd. zero	- 1.5"	2.5"	4.4"	3.7"	0.0"	- 7.3"	- 18.8"
TRAJ: 250 yd. zero	- 1.5"	4.0"	7.3"	8.1"	5.9"	0.0"	- 10.0"
TRAJ: 300 yd. zero	- 1.5"	5.7"	10.7"	13.1"	12.5"	8.3"	0.0"
VELOCITY (fps)	2100	1934	1777	1633	1490	1359	1245
ENERGY (ft. lbs.)	2155	1827	1544	1302	1084	902	758
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .9"	- 4.5"	- 11.6"	- 22.7"	- 38.6"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.2"	- 9.8"	- 20.4"	- 35.8"
TRAJ: 150 yd. zero	- 1.5"	1.5"	2.1"	0.0"	- 5.5"	- 15.1"	- 29.4"
TRAJ: 200 yd. zero	- 1.5"	2.9"	4.9"	4.2"	0.0"	- 8.2"	- 21.1"
TRAJ: 250 yd. zero	- 1.5"	4.6"	8.2"	9.1"	6.6"	0.0"	- 11.3"
TRAJ: 300 yd. zero	- 1.5"	6.4"	12.0"	14.7"	14.1"	9.4"	0.0"
VELOCITY (fps)	2000	1840	1690	1552	1416	1294	1191
ENERGY (ft. lbs.)	1955	1654	1395	1177	980	818	693
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.0"	- 5.3"	- 13.3"	- 25.5"	- 43.4"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.7"	- 11.1"	- 22.8"	- 40.1"
TRAJ: 150 yd. zero	- 1.5"	1.8"	2.5"	0.0"	- 6.1"	- 16.6"	- 32.6"
TRAJ: 200 yd. zero	- 1.5"	3.3"	5.6"	4.6"	0.0"	- 8.9"	- 23.4"
TRAJ: 250 yd. zero	- 1.5"	5.1"	9.1"	10.0"	7.2"	0.0"	- 12.6"
TRAJ: 300 yd. zero	- 1.5"	7.2"	13.4"	16.3"	15.6"	10.6"	0.0"
VELOCITY (fps)	1900	1746	1604	1463	1335	1225	1137
ENERGY (ft. lbs.)	1764	1489	1256	1046	871	733	632
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.4"	- 6.3"	- 15.5"	- 29.7"	- 50.0"
TRAJ: 100 yd. zero	- 1.5"	.7"	0.0"	- 4.2"	- 12.6"	- 26.1"	- 45.6"
TRAJ: 150 yd. zero	- 1.5"	2.1"	2.8"	0.0"	- 7.0"	- 19.1"	- 37.2"
TRAJ: 200 yd. zero	- 1.5"	3.9"	6.3"	5.3"	0.0"	- 10.3"	- 26.7"
TRAJ: 250 yd. zero	- 1.5"	6.0"	10.5"	11.5"	8.3"	0.0"	- 14.2"
TRAJ: 300 yd. zero	- 1.5"	8.3"	15.2"	18.6"	17.8"	11.9"	0.0"
VELOCITY (fps)	1800	1653	1509	1376	1260	1164	1085
ENERGY (ft. lbs.)	1583	1336	1112	925	776	662	575
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.7"	- 7.3"	- 17.6"	- 33.6"	- 55.7"
TRAJ: 100 yd. zero	- 1.5"	.9"	0.0"	- 4.7"	- 14.1"	- 29.3"	- 50.5"
TRAJ: 150 yd. zero	- 1.5"	2.4"	3.1"	0.0"	- 7.8"	- 21.4"	- 41.1"
TRAJ: 200 yd. zero	- 1.5"	4.4"	7.1"	5.9"	0.0"	- 11.5"	- 29.3"
TRAJ: 250 yd. zero	- 1.5"	6.7"	11.7"	12.9"	9.3"	0.0"	- 15.3"
TRAJ: 300 yd. zero	- 1.5"	9.3"	16.9"	20.6"	19.5"	12.8"	0.0"
VELOCITY (fps)	1700	1562	1425	1301	1197	1111	1042
ENERGY (ft. lbs.)	1412	1191	992	828	700	603	530
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 2.1"	- 8.7"	- 20.4"	- 38.3"	- 63.1"
TRAJ: 100 yd. zero	- 1.5"	1.1"	0.0"	- 5.5"	- 16.1"	- 32.9"	- 56.7"
TRAJ: 150 yd. zero	- 1.5"	2.9"	3.7"	0.0"	- 8.8"	- 23.7"	- 45.7"
TRAJ: 200 yd. zero	- 1.5"	5.1"	8.1"	6.6"	0.0"	- 12.7"	- 32.5"
TRAJ: 250 yd. zero	- 1.5"	7.7"	13.2"	14.3"	10.2"	0.0"	- 17.1"
TRAJ: 300 yd. zero	- 1.5"	10.5"	18.9"	22.9"	21.7"	14.3"	0.0"

**375 CALIBER (.375" Dia.) 270 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .274 BALLISTIC COEFFICIENT: .485

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2895	2698	2508	2329	2158	1997
ENERGY (ft. lbs.)	5763	5026	4364	3773	3252	2793	2391
TRAJ: 100 yd. zero	-1.5"	0.0"	-2.7"	-10.3"	-23.4"	-43.4"	-71.2"
TRAJ: 200 yd. zero	-1.5"	1.4"	0.0"	-6.1"	-17.9"	-36.6"	-62.9"
TRAJ: 300 yd. zero	-1.5"	3.4"	4.1"	0.0"	-9.8"	-26.3"	-50.5"
TRAJ: 400 yd. zero	-1.5"	5.9"	9.0"	7.3"	0.0"	-14.2"	-36.0"
TRAJ: 500 yd. zero	-1.5"	8.7"	14.6"	15.8"	11.4"	0.0"	-19.0"
TRAJ: 600 yd. zero	-1.5"	11.9"	21.0"	25.3"	24.0"	15.8"	0.0"
VELOCITY (fps)	3000	2799	2605	2420	2245	2079	1922
ENERGY (ft. lbs.)	5397	4697	4070	3513	3023	2592	2214
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.0"	-11.1"	-25.7"	-47.3"	-77.1"
TRAJ: 200 yd. zero	-1.5"	1.5"	0.0"	-6.6"	-19.6"	-39.8"	-68.1"
TRAJ: 300 yd. zero	-1.5"	3.7"	4.4"	0.0"	-10.8"	-28.7"	-54.8"
TRAJ: 400 yd. zero	-1.5"	6.4"	9.8"	8.1"	0.0"	-15.2"	-38.6"
TRAJ: 500 yd. zero	-1.5"	9.5"	15.9"	17.2"	12.2"	0.0"	-20.3"
TRAJ: 600 yd. zero	-1.5"	12.9"	22.7"	27.4"	25.7"	17.0"	0.0"
VELOCITY (fps)	2900	2702	2513	2333	2162	2001	1847
ENERGY (ft. lbs.)	5043	4380	3787	3264	2804	2400	2047
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.3"	-12.4"	-28.2"	-51.8"	-83.8"
TRAJ: 200 yd. zero	-1.5"	1.7"	0.0"	-7.4"	-21.6"	-43.3"	-73.8"
TRAJ: 300 yd. zero	-1.5"	4.2"	5.0"	0.0"	-11.8"	-30.8"	-58.9"
TRAJ: 400 yd. zero	-1.5"	7.1"	10.8"	8.7"	0.0"	-16.3"	-41.4"
TRAJ: 500 yd. zero	-1.5"	10.3"	17.4"	18.5"	13.1"	0.0"	-21.8"
TRAJ: 600 yd. zero	-1.5"	14.0"	24.6"	29.5"	27.8"	18.2"	0.0"
VELOCITY (fps)	2800	2606	2422	2246	2080	1923	1774
ENERGY (ft. lbs.)	4701	4074	3517	3026	2595	2217	1887
TRAJ: 100 yd. zero	-1.5"	0.0"	-3.6"	-13.6"	-30.6"	-55.9"	-90.5"
TRAJ: 200 yd. zero	-1.5"	1.8"	0.0"	-8.1"	-23.3"	-46.7"	-79.8"
TRAJ: 300 yd. zero	-1.5"	4.5"	5.4"	0.0"	-12.5"	-33.2"	-63.3"
TRAJ: 400 yd. zero	-1.5"	7.7"	11.7"	9.4"	0.0"	-17.5"	-44.5"
TRAJ: 500 yd. zero	-1.5"	11.2"	18.7"	20.0"	14.1"	0.0"	-23.4"
TRAJ: 600 yd. zero	-1.5"	15.1"	26.5"	31.7"	29.7"	19.6"	0.0"
VELOCITY (fps)	2700	2511	2331	2160	1998	1846	1702
ENERGY (ft. lbs.)	4372	3780	3258	2798	2395	2042	1737
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-14.8"	-33.3"	-60.6"	-98.3"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-8.7"	-25.2"	-50.5"	-86.1"
TRAJ: 300 yd. zero	-1.5"	5.0"	5.9"	0.0"	-13.5"	-35.8"	-68.5"
TRAJ: 400 yd. zero	-1.5"	8.3"	12.6"	10.2"	0.0"	-18.9"	-48.2"
TRAJ: 500 yd. zero	-1.5"	12.1"	20.2"	21.5"	15.2"	0.0"	-25.5"
TRAJ: 600 yd. zero	-1.5"	16.4"	28.7"	34.3"	32.2"	21.3"	0.0"
VELOCITY (fps)	2600	2416	2241	2075	1918	1769	1632
ENERGY (ft. lbs.)	4054	3499	3010	2581	2205	1877	1596
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.7"	-16.6"	-36.9"	-66.7"	-108.0"
TRAJ: 200 yd. zero	-1.5"	2.4"	0.0"	-9.5"	-27.4"	-54.8"	-93.8"
TRAJ: 300 yd. zero	-1.5"	5.6"	6.4"	0.0"	-14.6"	-38.8"	-74.8"
TRAJ: 400 yd. zero	-1.5"	9.2"	13.7"	11.0"	0.0"	-20.5"	-52.6"
TRAJ: 500 yd. zero	-1.5"	13.3"	21.9"	23.3"	16.4"	0.0"	-28.0"
TRAJ: 600 yd. zero	-1.5"	18.0"	31.3"	37.3"	35.1"	23.3"	0.0"
VELOCITY (fps)	2500	2321	2151	1989	1837	1694	1562
ENERGY (ft. lbs.)	3748	3230	2773	2373	2023	1721	1464
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.2"	-18.3"	-40.4"	-73.0"	-118.4"
TRAJ: 200 yd. zero	-1.5"	2.6"	0.0"	-10.4"	-29.8"	-59.8"	-102.6"
TRAJ: 300 yd. zero	-1.5"	6.1"	7.0"	0.0"	-15.9"	-42.4"	-81.7"
TRAJ: 400 yd. zero	-1.5"	10.1"	14.9"	12.0"	0.0"	-22.5"	-57.8"
TRAJ: 500 yd. zero	-1.5"	14.6"	23.9"	25.5"	18.0"	0.0"	-30.8"
TRAJ: 600 yd. zero	-1.5"	19.7"	34.2"	40.9"	38.6"	25.7"	0.0"
VELOCITY (fps)	2400	2226	2061	1904	1757	1620	1484
ENERGY (ft. lbs.)	3454	2971	2546	2175	1851	1574	1321
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.8"	-20.2"	-44.4"	-80.4"	-129.7"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-11.4"	-32.6"	-65.8"	-112.1"
TRAJ: 300 yd. zero	-1.5"	6.7"	7.8"	0.0"	-17.4"	-46.7"	-89.2"
TRAJ: 400 yd. zero	-1.5"	11.1"	16.3"	13.1"	0.0"	-24.9"	-63.1"
TRAJ: 500 yd. zero	-1.5"	16.1"	26.3"	28.1"	20.0"	0.0"	-33.1"
TRAJ: 600 yd. zero	-1.5"	21.6"	37.4"	44.8"	42.1"	27.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	2131	1971	1819	1678	1547	1418
ENERGY (ft. lbs.)	3172	2723	2329	1985	1688	1436	1205
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.5"	- 22.3"	- 49.2"	- 89.2"	- 142.8"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 12.5"	- 36.1"	- 72.8"	- 123.2"
TRAJ: 300 yd. zero	- 1.5"	7.5"	8.4"	0.0"	- 19.3"	- 51.9"	- 98.0"
TRAJ: 400 yd. zero	- 1.5"	12.3"	18.1"	14.5"	0.0"	- 27.7"	- 69.0"
TRAJ: 500 yd. zero	- 1.5"	17.9"	29.1"	31.2"	22.2"	0.0"	- 35.7"
TRAJ: 600 yd. zero	- 1.5"	23.8"	41.1"	49.0"	46.0"	29.8"	0.0"
VELOCITY (fps)	2200	2036	1881	1735	1600	1486	1343
ENERGY (ft. lbs.)	2902	2486	2122	1806	1536	1289	1082
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.3"	- 24.9"	- 53.8"	- 96.6"	- 156.5"
TRAJ: 200 yd. zero	- 1.5"	3.7"	0.0"	- 13.9"	- 39.1"	- 78.2"	- 134.5"
TRAJ: 300 yd. zero	- 1.5"	8.3"	9.3"	0.0"	- 20.5"	- 55.0"	- 106.6"
TRAJ: 400 yd. zero	- 1.5"	13.5"	19.6"	15.4"	0.0"	- 29.3"	- 75.7"
TRAJ: 500 yd. zero	- 1.5"	19.3"	31.3"	33.0"	23.5"	0.0"	- 40.5"
TRAJ: 600 yd. zero	- 1.5"	26.1"	44.8"	53.3"	50.5"	33.8"	0.0"

## 375 CALIBER (.375" Dia.) 270 GRAIN ROUND NOSE

SECTIONAL DENSITY: .274 BALLISTIC COEFFICIENT: .259

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2722	2374	2057	1772	1513	1294
ENERGY (ft. lbs.)	5763	4444	3379	2538	1883	1373	1004
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.2"	- 12.9"	- 31.0"	- 60.1"	- 104.5"
TRAJ: 200 yd. zero	- 1.5"	1.6"	0.0"	- 8.0"	- 24.5"	- 52.0"	- 94.7"
TRAJ: 300 yd. zero	- 1.5"	4.3"	5.3"	0.0"	- 13.8"	- 38.6"	- 78.7"
TRAJ: 400 yd. zero	- 1.5"	7.8"	12.3"	10.4"	0.0"	- 21.3"	- 57.8"
TRAJ: 500 yd. zero	- 1.5"	12.0"	20.8"	23.2"	17.1"	0.0"	- 32.3"
TRAJ: 600 yd. zero	- 1.5"	17.4"	31.6"	39.4"	38.6"	26.9"	0.0"
VELOCITY (fps)	3000	2629	2289	1981	1704	1455	1248
ENERGY (ft. lbs.)	5397	4146	3142	2353	1742	1269	934
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.6"	- 14.1"	- 33.7"	- 65.1"	- 112.8"
TRAJ: 200 yd. zero	- 1.5"	1.8"	0.0"	- 8.5"	- 26.3"	- 55.9"	- 101.7"
TRAJ: 300 yd. zero	- 1.5"	4.7"	5.7"	0.0"	- 14.8"	- 41.6"	- 84.6"
TRAJ: 400 yd. zero	- 1.5"	8.4"	13.2"	11.2"	0.0"	- 23.0"	- 62.3"
TRAJ: 500 yd. zero	- 1.5"	13.0"	22.4"	25.0"	18.4"	0.0"	- 34.6"
TRAJ: 600 yd. zero	- 1.5"	18.8"	33.9"	42.3"	41.5"	28.9"	0.0"
VELOCITY (fps)	2900	2537	2205	1905	1638	1398	1205
ENERGY (ft. lbs.)	5043	3859	2916	2176	1608	1172	870
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.0"	- 15.2"	- 36.3"	- 70.3"	- 122.2"
TRAJ: 200 yd. zero	- 1.5"	2.0"	0.0"	- 9.2"	- 28.3"	- 60.1"	- 110.0"
TRAJ: 300 yd. zero	- 1.5"	5.1"	6.1"	0.0"	- 16.0"	- 44.8"	- 91.6"
TRAJ: 400 yd. zero	- 1.5"	9.1"	14.2"	12.0"	0.0"	- 24.8"	- 67.6"
TRAJ: 500 yd. zero	- 1.5"	14.1"	24.1"	26.9"	19.9"	0.0"	- 37.8"
TRAJ: 600 yd. zero	- 1.5"	20.4"	36.7"	45.8"	45.1"	31.6"	0.0"
VELOCITY (fps)	2800	2445	2122	1830	1573	1343	1166
ENERGY (ft. lbs.)	4701	3584	2699	2008	1483	1081	815
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.4"	- 16.8"	- 39.8"	- 76.7"	- 132.5"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 10.1"	- 30.9"	- 65.6"	- 119.2"
TRAJ: 300 yd. zero	- 1.5"	5.6"	6.8"	0.0"	- 17.3"	- 48.6"	- 98.8"
TRAJ: 400 yd. zero	- 1.5"	10.0"	15.5"	13.0"	0.0"	- 26.8"	- 72.7"
TRAJ: 500 yd. zero	- 1.5"	15.3"	26.2"	29.2"	21.5"	0.0"	- 40.4"
TRAJ: 600 yd. zero	- 1.5"	22.1"	39.7"	49.4"	48.5"	33.7"	0.0"
VELOCITY (fps)	2700	2353	2039	1756	1499	1282	1126
ENERGY (ft. lbs.)	4372	3321	2493	1848	1347	986	760
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.8"	- 18.2"	- 43.0"	- 83.4"	- 144.1"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.9"	- 33.3"	- 71.2"	- 129.5"
TRAJ: 300 yd. zero	- 1.5"	6.1"	7.3"	0.0"	- 18.6"	- 52.9"	- 107.5"
TRAJ: 400 yd. zero	- 1.5"	10.8"	16.7"	14.0"	0.0"	- 29.6"	- 79.5"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.5"	31.8"	23.7"	0.0"	- 43.9"
TRAJ: 600 yd. zero	- 1.5"	24.0"	43.2"	53.8"	53.0"	36.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2262	1957	1683	1437	1234	1090
ENERGY (ft. lbs.)	4054	3069	2296	1699	1238	913	712
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.5"	-20.2"	-47.3"	-91.6"	-157.4"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.9"	-36.3"	-77.8"	-140.8"
TRAJ: 300 yd. zero	-1.5"	6.7"	8.0"	0.0"	-20.4"	-57.9"	-116.9"
TRAJ: 400 yd. zero	-1.5"	11.8"	18.2"	15.3"	0.0"	-32.4"	-86.3"
TRAJ: 500 yd. zero	-1.5"	18.3"	31.1"	34.8"	26.0"	0.0"	-47.4"
TRAJ: 600 yd. zero	-1.5"	26.2"	47.0"	58.5"	57.6"	39.5"	0.0"
VELOCITY (fps)	2500	2172	1875	1612	1376	1189	1060
ENERGY (ft. lbs.)	3748	2828	2108	1557	1135	847	674
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.0"	-22.2"	-51.9"	-99.8"	-170.4"
TRAJ: 200 yd. zero	-1.5"	3.0"	0.0"	-13.1"	-39.7"	-84.8"	-152.1"
TRAJ: 300 yd. zero	-1.5"	7.4"	8.7"	0.0"	-22.3"	-62.7"	-125.9"
TRAJ: 400 yd. zero	-1.5"	13.0"	19.9"	16.7"	0.0"	-34.8"	-92.4"
TRAJ: 500 yd. zero	-1.5"	20.0"	33.9"	37.7"	27.9"	0.0"	-50.5"
TRAJ: 600 yd. zero	-1.5"	28.4"	50.7"	63.0"	61.6"	42.2"	0.0"
VELOCITY (fps)	2400	2081	1793	1541	1317	1149	1033
ENERGY (ft. lbs.)	3454	2597	1929	1425	1040	791	640
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.7"	-24.5"	-57.0"	-109.6"	-186.3"
TRAJ: 200 yd. zero	-1.5"	3.4"	0.0"	-14.4"	-43.6"	-92.8"	-166.1"
TRAJ: 300 yd. zero	-1.5"	8.2"	9.7"	0.0"	-24.2"	-68.6"	-137.2"
TRAJ: 400 yd. zero	-1.5"	14.3"	21.8"	18.2"	0.0"	-38.3"	-100.7"
TRAJ: 500 yd. zero	-1.5"	21.9"	37.1"	41.2"	30.7"	0.0"	-54.7"
TRAJ: 600 yd. zero	-1.5"	31.1"	55.4"	68.6"	67.2"	45.7"	0.0"
VELOCITY (fps)	2300	1991	1713	1482	1254	1102	1001
ENERGY (ft. lbs.)	3172	2377	1760	1282	942	729	601
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.4"	-27.0"	-63.1"	-120.0"	-203.1"
TRAJ: 200 yd. zero	-1.5"	3.7"	0.0"	-15.8"	-48.1"	-101.2"	-180.6"
TRAJ: 300 yd. zero	-1.5"	9.0"	10.6"	0.0"	-27.0"	-74.8"	-148.9"
TRAJ: 400 yd. zero	-1.5"	15.8"	24.1"	20.3"	0.0"	-41.1"	-108.4"
TRAJ: 500 yd. zero	-1.5"	24.0"	40.5"	44.9"	32.9"	0.0"	-59.1"
TRAJ: 600 yd. zero	-1.5"	33.9"	60.2"	74.5"	72.3"	49.3"	0.0"
VELOCITY (fps)	2200	1901	1634	1394	1202	1069	977
ENERGY (ft. lbs.)	2902	2166	1601	1166	867	686	572
TRAJ: 100 yd. zero	-1.5"	0.0"	-8.4"	-30.0"	-69.4"	-131.8"	-221.7"
TRAJ: 200 yd. zero	-1.5"	4.2"	0.0"	-17.3"	-52.5"	-110.7"	-196.4"
TRAJ: 300 yd. zero	-1.5"	10.0"	11.6"	0.0"	-29.3"	-81.7"	-161.6"
TRAJ: 400 yd. zero	-1.5"	17.4"	26.3"	22.0"	0.0"	-45.0"	-117.5"
TRAJ: 500 yd. zero	-1.5"	26.4"	44.3"	49.1"	36.0"	0.0"	-63.5"
TRAJ: 600 yd. zero	-1.5"	37.0"	65.5"	80.8"	78.4"	52.9"	0.0"

### 375 CALIBER (.375" Dia.) 300 GRAIN ROUND NOSE

SECTIONAL DENSITY: .305 BALLISTIC COEFFICIENT: .263

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2542	2215	1918	1653	1414	1219
ENERGY (ft. lbs.)	5604	4306	3268	2451	1820	1332	990
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.0"	-15.3"	-36.4"	-70.2"	-121.7"
TRAJ: 200 yd. zero	-1.5"	2.0"	0.0"	-9.3"	-28.4"	-60.2"	-109.6"
TRAJ: 300 yd. zero	-1.5"	5.1"	6.2"	0.0"	-16.0"	-44.7"	-91.0"
TRAJ: 400 yd. zero	-1.5"	9.1"	14.2"	12.0"	0.0"	-24.6"	-67.0"
TRAJ: 500 yd. zero	-1.5"	14.0"	24.1"	26.8"	19.7"	0.0"	-37.4"
TRAJ: 600 yd. zero	-1.5"	20.3"	36.6"	45.5"	44.7"	31.2"	0.0"
VELOCITY (fps)	2800	2450	2131	1842	1587	1358	1179
ENERGY (ft. lbs.)	5224	3999	3026	2262	1678	1229	925
TRAJ: 100 yd. zero	-1.5"	0.0"	-4.3"	-16.5"	-39.5"	-76.0"	-131.0"
TRAJ: 200 yd. zero	-1.5"	2.2"	0.0"	-10.0"	-30.7"	-65.0"	-117.8"
TRAJ: 300 yd. zero	-1.5"	5.5"	6.7"	0.0"	-17.3"	-48.3"	-97.8"
TRAJ: 400 yd. zero	-1.5"	9.9"	15.4"	13.0"	0.0"	-26.6"	-71.7"
TRAJ: 500 yd. zero	-1.5"	15.2"	26.0"	29.0"	21.3"	0.0"	-39.7"
TRAJ: 600 yd. zero	-1.5"	21.8"	39.3"	48.9"	47.8"	33.1"	0.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2358	2048	1768	1513	1296	1137
ENERGY (ft. lbs.)	4857	3706	2795	2082	1525	1120	861
TRAJ: 100 yd. zero	- 1.5"	0.0"	4.9"	- 18.5"	- 43.4"	- 83.5"	- 143.3"
TRAJ: 200 yd. zero	- 1.5"	2.5"	0.0"	- 11.0"	- 33.4"	- 71.1"	- 128.4"
TRAJ: 300 yd. zero	- 1.5"	6.2"	7.4"	0.0"	- 18.6"	- 52.6"	- 106.2"
TRAJ: 400 yd. zero	- 1.5"	10.9"	16.7"	14.0"	0.0"	- 29.2"	- 78.2"
TRAJ: 500 yd. zero	- 1.5"	16.7"	28.4"	31.6"	23.4"	0.0"	- 43.1"
TRAJ: 600 yd. zero	- 1.5"	23.9"	42.8"	53.1"	52.2"	35.9"	0.0"
VELOCITY (fps)	2600	2267	1966	1695	1450	1247	1099
ENERGY (ft. lbs.)	4504	3425	2574	1914	1401	1035	806
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.4"	- 20.2"	- 47.0"	- 90.6"	- 155.2"
TRAJ: 200 yd. zero	- 1.5"	2.7"	0.0"	- 12.0"	- 36.1"	- 77.0"	- 138.8"
TRAJ: 300 yd. zero	- 1.5"	6.7"	8.0"	0.0"	- 20.0"	- 56.9"	- 114.7"
TRAJ: 400 yd. zero	- 1.5"	11.8"	18.1"	15.0"	0.0"	- 31.8"	- 84.6"
TRAJ: 500 yd. zero	- 1.5"	18.1"	30.8"	34.2"	25.5"	0.0"	- 46.4"
TRAJ: 600 yd. zero	- 1.5"	25.9"	46.3"	57.4"	56.4"	38.7"	0.0"
VELOCITY (fps)	2500	2176	1884	1623	1388	1200	1069
ENERGY (ft. lbs.)	4164	3156	2364	1755	1284	960	762
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.0"	- 22.2"	- 51.5"	- 99.2"	- 169.0"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 13.1"	- 39.5"	- 84.1"	- 151.0"
TRAJ: 300 yd. zero	- 1.5"	7.4"	8.8"	0.0"	- 21.9"	- 62.1"	- 124.6"
TRAJ: 400 yd. zero	- 1.5"	12.9"	19.8"	16.5"	0.0"	- 34.7"	- 91.7"
TRAJ: 500 yd. zero	- 1.5"	19.8"	33.7"	37.3"	27.8"	0.0"	- 49.9"
TRAJ: 600 yd. zero	- 1.5"	28.2"	50.3"	62.3"	61.1"	41.7"	0.0"
VELOCITY (fps)	2400	2086	1802	1552	1329	1158	1041
ENERGY (ft. lbs.)	3838	2899	2163	1605	1176	894	723
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.6"	- 24.0"	- 56.2"	- 108.3"	- 183.6"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 14.1"	- 43.0"	- 91.8"	- 163.7"
TRAJ: 300 yd. zero	- 1.5"	8.0"	9.4"	0.0"	- 24.1"	- 68.2"	- 135.5"
TRAJ: 400 yd. zero	- 1.5"	14.1"	21.5"	18.1"	0.0"	- 38.0"	- 99.2"
TRAJ: 500 yd. zero	- 1.5"	21.7"	36.7"	41.0"	30.4"	0.0"	- 53.6"
TRAJ: 600 yd. zero	- 1.5"	30.6"	54.6"	67.8"	66.2"	44.7"	0.0"
VELOCITY (fps)	2300	1995	1721	1472	1264	1111	1008
ENERGY (ft. lbs.)	3525	2653	1973	1445	1065	822	677
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.3"	- 26.7"	- 62.4"	- 118.8"	- 201.0"
TRAJ: 200 yd. zero	- 1.5"	3.7"	0.0"	- 15.6"	- 47.7"	- 100.4"	- 178.9"
TRAJ: 300 yd. zero	- 1.5"	8.9"	10.5"	0.0"	- 26.8"	- 74.2"	- 147.5"
TRAJ: 400 yd. zero	- 1.5"	15.6"	23.9"	20.1"	0.0"	- 40.7"	- 107.3"
TRAJ: 500 yd. zero	- 1.5"	23.8"	40.2"	44.6"	32.6"	0.0"	- 58.4"
TRAJ: 600 yd. zero	- 1.5"	33.5"	59.7"	73.8"	71.6"	48.7"	0.0"

**375 CALIBER (.375" Dia.) 300 GRAIN FULL METAL JACKET**

SECTIONAL DENSITY: .305 BALLISTIC COEFFICIENT: .282

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2565	2257	1976	1721	1487	1288
ENERGY (ft. lbs.)	5604	4384	3394	2600	1973	1474	1105
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 3.8"	- 14.8"	- 34.5"	- 66.3"	- 113.7"
TRAJ: 200 yd. zero	- 1.5"	1.9"	0.0"	- 8.9"	- 26.8"	- 56.6"	- 102.1"
TRAJ: 300 yd. zero	- 1.5"	4.9"	6.0"	0.0"	- 14.8"	- 41.6"	- 84.1"
TRAJ: 400 yd. zero	- 1.5"	8.8"	13.4"	11.1"	0.0"	- 23.1"	- 61.8"
TRAJ: 500 yd. zero	- 1.5"	13.3"	22.7"	25.0"	18.5"	0.0"	- 34.1"
TRAJ: 600 yd. zero	- 1.5"	19.0"	34.0"	42.1"	41.2"	28.4"	0.0"
VELOCITY (fps)	2800	2472	2172	1898	1652	1428	1241
ENERGY (ft. lbs.)	5224	4073	3144	2401	1819	1359	1025
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.3"	- 16.2"	- 38.0"	- 72.5"	- 123.8"
TRAJ: 200 yd. zero	- 1.5"	2.2"	0.0"	- 9.6"	- 29.3"	- 61.5"	- 110.6"
TRAJ: 300 yd. zero	- 1.5"	5.4"	6.4"	0.0"	- 16.4"	- 45.5"	- 91.3"
TRAJ: 400 yd. zero	- 1.5"	9.5"	14.7"	12.4"	0.0"	- 24.9"	- 66.6"
TRAJ: 500 yd. zero	- 1.5"	14.5"	24.6"	27.3"	19.9"	0.0"	- 36.7"
TRAJ: 600 yd. zero	- 1.5"	20.6"	36.9"	45.7"	44.4"	30.6"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2700	2380	2088	1822	1585	1370	1197
ENERGY (ft. lbs.)	4857	3775	2905	2212	1674	1250	954
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 4.7"	- 17.8"	- 41.6"	- 79.4"	- 135.6"
TRAJ: 200 yd. zero	- 1.5"	2.4"	0.0"	- 10.6"	- 32.0"	- 67.4"	- 121.3"
TRAJ: 300 yd. zero	- 1.5"	5.9"	7.1"	0.0"	- 17.8"	- 49.6"	- 100.0"
TRAJ: 400 yd. zero	- 1.5"	10.4"	16.0"	13.4"	0.0"	- 27.3"	- 73.2"
TRAJ: 500 yd. zero	- 1.5"	15.9"	27.0"	29.8"	21.9"	0.0"	- 40.4"
TRAJ: 600 yd. zero	- 1.5"	22.6"	40.4"	50.0"	48.8"	33.7"	0.0"
VELOCITY (fps)	2600	2289	2005	1747	1510	1306	1152
ENERGY (ft. lbs.)	4504	3490	2677	2033	1519	1137	884
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.2"	- 19.3"	- 44.8"	- 86.0"	- 146.6"
TRAJ: 200 yd. zero	- 1.5"	2.6"	0.0"	- 11.4"	- 34.4"	- 72.9"	- 130.9"
TRAJ: 300 yd. zero	- 1.5"	6.4"	7.7"	0.0"	- 19.0"	- 53.7"	- 107.9"
TRAJ: 400 yd. zero	- 1.5"	11.2"	17.2"	14.3"	0.0"	- 29.9"	- 79.3"
TRAJ: 500 yd. zero	- 1.5"	17.2"	29.2"	32.3"	23.9"	0.0"	- 43.3"
TRAJ: 600 yd. zero	- 1.5"	24.4"	43.6"	54.0"	52.9"	36.2"	0.0"
VELOCITY (fps)	2500	2197	1921	1672	1445	1254	1112
ENERGY (ft. lbs.)	4164	3217	2460	1864	1392	1048	824
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 5.9"	- 21.4"	- 49.3"	- 94.2"	- 160.5"
TRAJ: 200 yd. zero	- 1.5"	3.0"	0.0"	- 12.4"	- 37.4"	- 79.4"	- 142.6"
TRAJ: 300 yd. zero	- 1.5"	7.1"	8.3"	0.0"	- 20.8"	- 58.6"	- 117.6"
TRAJ: 400 yd. zero	- 1.5"	12.3"	18.7"	15.6"	0.0"	- 32.5"	- 86.4"
TRAJ: 500 yd. zero	- 1.5"	18.9"	31.8"	35.2"	26.1"	0.0"	- 47.3"
TRAJ: 600 yd. zero	- 1.5"	26.8"	47.6"	58.8"	57.6"	39.5"	0.0"
VELOCITY (fps)	2400	2106	1838	1599	1382	1206	1080
ENERGY (ft. lbs.)	3838	2955	2252	1705	1273	969	777
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 6.5"	- 23.5"	- 54.1"	- 102.9"	- 173.8"
TRAJ: 200 yd. zero	- 1.5"	3.3"	0.0"	- 13.7"	- 41.0"	- 86.6"	- 154.2"
TRAJ: 300 yd. zero	- 1.5"	7.8"	9.1"	0.0"	- 22.7"	- 63.7"	- 126.8"
TRAJ: 400 yd. zero	- 1.5"	13.5"	20.5"	17.1"	0.0"	- 35.3"	- 92.7"
TRAJ: 500 yd. zero	- 1.5"	20.6"	34.7"	38.3"	28.3"	0.0"	- 50.3"
TRAJ: 600 yd. zero	- 1.5"	29.0"	51.4"	63.4"	61.8"	41.9"	0.0"
VELOCITY (fps)	2300	2015	1756	1528	1321	1162	1050
ENERGY (ft. lbs.)	3525	2705	2054	1555	1163	900	734
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.2"	- 25.9"	- 59.8"	- 113.2"	- 190.1"
TRAJ: 200 yd. zero	- 1.5"	3.6"	0.0"	- 15.1"	- 45.3"	- 95.2"	- 168.5"
TRAJ: 300 yd. zero	- 1.5"	8.7"	10.1"	0.0"	- 25.1"	- 69.9"	- 138.2"
TRAJ: 400 yd. zero	- 1.5"	15.0"	22.7"	18.9"	0.0"	- 38.5"	- 100.4"
TRAJ: 500 yd. zero	- 1.5"	22.7"	38.1"	42.0"	30.8"	0.0"	- 54.2"
TRAJ: 600 yd. zero	- 1.5"	31.7"	56.2"	69.1"	67.0"	45.2"	0.0"

#### 44 CALIBER (.430" Dia.) 265 GRAIN FLAT POINT

SECTIONAL DENSITY: .205 BALLISTIC COEFFICIENT: .191

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2200	1994	1801	1625	1457	1307	1185
ENERGY (ft. lbs.)	2849	2339	1910	1555	1249	1006	826
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .7"	- 4.3"	- 11.1"	- 22.1"	- 38.4"
TRAJ: 100 yd. zero	- 1.5"	.4"	0.0"	- 3.1"	- 9.6"	- 20.2"	- 36.2"
TRAJ: 150 yd. zero	- 1.5"	1.4"	2.1"	0.0"	- 5.4"	- 14.9"	- 29.8"
TRAJ: 200 yd. zero	- 1.5"	2.8"	4.8"	4.1"	0.0"	- 8.1"	- 21.7"
TRAJ: 250 yd. zero	- 1.5"	4.4"	8.1"	9.0"	6.5"	0.0"	- 11.9"
TRAJ: 300 yd. zero	- 1.5"	6.4"	12.1"	14.9"	14.5"	9.9"	0.0"
VELOCITY (fps)	2100	1900	1715	1548	1387	1249	1141
ENERGY (ft. lbs.)	2596	2125	1732	1410	1132	918	766
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.0"	- 5.0"	- 12.8"	- 25.2"	- 43.3"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.5"	- 10.7"	- 22.6"	- 40.2"
TRAJ: 150 yd. zero	- 1.5"	1.7"	2.4"	0.0"	- 6.0"	- 16.7"	- 33.1"
TRAJ: 200 yd. zero	- 1.5"	3.2"	5.4"	4.6"	0.0"	- 9.1"	- 24.0"
TRAJ: 250 yd. zero	- 1.5"	5.0"	9.1"	10.1"	7.3"	0.0"	- 13.0"
TRAJ: 300 yd. zero	- 1.5"	7.2"	13.4"	16.6"	16.0"	10.9"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2000	1807	1631	1462	1311	1188	1091
ENERGY (ft. lbs.)	2354	1922	1565	1257	1012	830	701
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.2"	- 5.8"	- 14.6"	- 28.5"	- 48.3"
TRAJ: 100 yd. zero	- 1.5"	.6"	0.0"	- 3.9"	- 12.1"	- 25.3"	- 44.5"
TRAJ: 150 yd. zero	- 1.5"	1.9"	2.6"	0.0"	- 6.8"	- 18.8"	- 36.6"
TRAJ: 200 yd. zero	- 1.5"	3.7"	6.1"	5.1"	0.0"	- 10.2"	- 26.3"
TRAJ: 250 yd. zero	- 1.5"	5.7"	10.2"	11.3"	8.2"	0.0"	- 14.1"
TRAJ: 300 yd. zero	- 1.5"	8.1"	14.9"	18.3"	17.6"	11.8"	0.0"
VELOCITY (fps)	1900	1715	1547	1387	1248	1141	1056
ENERGY (ft. lbs.)	2125	1731	1409	1132	917	766	656
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.5"	- 6.8"	- 16.7"	- 32.4"	- 54.3"
TRAJ: 100 yd. zero	- 1.5"	.8"	0.0"	- 4.5"	- 13.6"	- 28.5"	- 49.7"
TRAJ: 150 yd. zero	- 1.5"	2.3"	3.0"	0.0"	- 7.6"	- 21.0"	- 40.7"
TRAJ: 200 yd. zero	- 1.5"	4.2"	6.8"	5.7"	0.0"	- 11.4"	- 29.2"
TRAJ: 250 yd. zero	- 1.5"	6.5"	11.4"	12.6"	9.2"	0.0"	- 15.4"
TRAJ: 300 yd. zero	- 1.5"	9.1"	16.6"	20.4"	19.5"	12.9"	0.0"
VELOCITY (fps)	1800	1624	1456	1306	1184	1088	1014
ENERGY (ft. lbs.)	1907	1553	1247	1004	825	697	605
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.8"	- 7.9"	- 19.0"	- 36.1"	- 60.4"
TRAJ: 100 yd. zero	- 1.5"	.9"	0.0"	- 5.0"	- 15.2"	- 31.4"	- 54.7"
TRAJ: 150 yd. zero	- 1.5"	2.6"	3.4"	0.0"	- 8.4"	- 22.9"	- 44.5"
TRAJ: 200 yd. zero	- 1.5"	4.8"	7.6"	6.3"	0.0"	- 12.4"	- 31.9"
TRAJ: 250 yd. zero	- 1.5"	7.2"	12.6"	13.8"	9.9"	0.0"	- 17.0"
TRAJ: 300 yd. zero	- 1.5"	10.1"	18.3"	22.3"	21.3"	14.2"	0.0"
VELOCITY (fps)	1700	1534	1375	1238	1133	1050	983
ENERGY (ft. lbs.)	1701	1385	1112	903	756	649	569
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 2.2"	- 9.2"	- 22.1"	- 41.2"	- 68.0"
TRAJ: 100 yd. zero	- 1.5"	1.1"	0.0"	- 5.8"	- 17.6"	- 35.5"	- 61.1"
TRAJ: 150 yd. zero	- 1.5"	3.1"	3.9"	0.0"	- 9.8"	- 25.8"	- 49.4"
TRAJ: 200 yd. zero	- 1.5"	5.5"	8.8"	7.4"	0.0"	- 13.5"	- 34.7"
TRAJ: 250 yd. zero	- 1.5"	8.3"	14.2"	15.5"	10.8"	0.0"	- 18.4"
TRAJ: 300 yd. zero	- 1.5"	11.3"	20.4"	24.7"	23.2"	15.4"	0.0"
VELOCITY (fps)	1600	1434	1288	1170	1078	1006	946
ENERGY (ft. lbs.)	1507	1210	976	805	684	595	527
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 2.8"	- 11.0"	- 25.4"	- 46.9"	- 76.4"
TRAJ: 100 yd. zero	- 1.5"	1.4"	0.0"	- 6.8"	- 19.7"	- 39.9"	- 67.9"
TRAJ: 150 yd. zero	- 1.5"	3.7"	4.6"	0.0"	- 10.6"	- 28.5"	- 54.2"
TRAJ: 200 yd. zero	- 1.5"	6.4"	9.9"	8.0"	0.0"	- 15.1"	- 38.2"
TRAJ: 250 yd. zero	- 1.5"	9.4"	16.0"	17.1"	12.2"	0.0"	- 20.0"
TRAJ: 300 yd. zero	- 1.5"	12.7"	22.6"	27.1"	25.5"	16.7"	0.0"
VELOCITY (fps)	1500	1345	1214	1110	1032	968	910
ENERGY (ft. lbs.)	1324	1064	867	726	627	552	487
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 3.4"	- 12.7"	- 28.8"	- 52.7"	- 85.3"
TRAJ: 100 yd. zero	- 1.5"	1.7"	0.0"	- 7.5"	- 21.9"	- 44.0"	- 74.9"
TRAJ: 150 yd. zero	- 1.5"	4.2"	5.0"	0.0"	- 11.8"	- 31.4"	- 59.8"
TRAJ: 200 yd. zero	- 1.5"	7.2"	11.0"	8.9"	0.0"	- 16.6"	- 42.1"
TRAJ: 250 yd. zero	- 1.5"	10.5"	17.6"	18.9"	13.3"	0.0"	- 22.1"
TRAJ: 300 yd. zero	- 1.5"	14.2"	25.0"	29.9"	28.1"	18.4"	0.0"
VELOCITY (fps)	1400	1259	1149	1062	993	935	879
ENERGY (ft. lbs.)	1154	933	777	663	580	514	455
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 4.1"	- 14.8"	- 33.3"	- 60.2"	- 96.2"
TRAJ: 100 yd. zero	- 1.5"	2.1"	0.0"	- 8.6"	- 25.0"	- 49.7"	- 83.7"
TRAJ: 150 yd. zero	- 1.5"	5.0"	5.7"	0.0"	- 13.5"	- 35.4"	- 66.5"
TRAJ: 200 yd. zero	- 1.5"	8.3"	12.5"	10.2"	0.0"	- 18.5"	- 46.2"
TRAJ: 250 yd. zero	- 1.5"	12.0"	19.9"	21.3"	14.8"	0.0"	- 24.0"
TRAJ: 300 yd. zero	- 1.5"	16.0"	27.9"	33.3"	30.8"	20.0"	0.0"
VELOCITY (fps)	1300	1179	1085	1011	951	894	842
ENERGY (ft. lbs.)	995	818	692	602	532	471	417
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 4.8"	- 17.0"	- 37.8"	- 67.5"	- 107.7"
TRAJ: 100 yd. zero	- 1.5"	2.4"	0.0"	- 9.7"	- 28.1"	- 55.4"	- 93.2"
TRAJ: 150 yd. zero	- 1.5"	5.7"	6.5"	0.0"	- 15.0"	- 39.1"	- 73.7"
TRAJ: 200 yd. zero	- 1.5"	9.5"	14.1"	11.3"	0.0"	- 20.2"	- 51.0"
TRAJ: 250 yd. zero	- 1.5"	13.5"	22.2"	23.5"	16.2"	0.0"	- 26.7"
TRAJ: 300 yd. zero	- 1.5"	18.0"	31.1"	36.9"	34.0"	22.3"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1200	1100	1024	962	904	851	802
ENERGY (ft. lbs.)	848	712	617	544	481	426	378
TRAJ: 50 yd. zero	-1.5"	0.0"	-5.8"	-19.9"	-43.4"	-77.1"	-122.7"
TRAJ: 100 yd. zero	-1.5"	2.9"	0.0"	-11.1"	-31.7"	-62.4"	-105.1"
TRAJ: 150 yd. zero	-1.5"	6.7"	7.4"	0.0"	-16.8"	-43.8"	-82.8"
TRAJ: 200 yd. zero	-1.5"	10.9"	15.9"	12.6"	0.0"	-22.8"	-57.6"
TRAJ: 250 yd. zero	-1.5"	15.4"	25.0"	26.3"	18.3"	0.0"	-30.2"
TRAJ: 300 yd. zero	-1.5"	20.5"	35.1"	41.4"	38.4"	25.2"	0.0"
VELOCITY (fps)	1100	1024	961	904	851	802	755
ENERGY (ft. lbs.)	712	617	544	481	426	378	336
TRAJ: 50 yd. zero	-1.5"	0.0"	-6.9"	-23.3"	-50.3"	-89.3"	-141.6"
TRAJ: 100 yd. zero	-1.5"	3.5"	0.0"	-13.0"	-36.4"	-72.1"	-120.9"
TRAJ: 150 yd. zero	-1.5"	7.8"	8.7"	0.0"	-19.1"	-50.4"	-94.8"
TRAJ: 200 yd. zero	-1.5"	12.6"	18.2"	14.4"	0.0"	-26.5"	-66.1"
TRAJ: 250 yd. zero	-1.5"	17.9"	28.8"	30.3"	21.2"	0.0"	-34.3"
TRAJ: 300 yd. zero	-1.5"	23.6"	40.3"	47.4"	44.1"	28.6"	0.0"

**45 CALIBER (.458" Dia.) 300 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .204 BALLISTIC COEFFICIENT: .171

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2000	1786	1592	1410	1254	1135	1044
ENERGY (ft. lbs.)	2665	2124	1689	1324	1047	858	726
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.2"	-6.0"	-15.2"	-29.9"	-50.8"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.1"	-12.6"	-26.7"	-47.0"
TRAJ: 150 yd. zero	-1.5"	2.0"	2.7"	0.0"	-7.2"	-19.9"	-38.8"
TRAJ: 200 yd. zero	-1.5"	3.8"	6.3"	5.4"	0.0"	-10.9"	-28.0"
TRAJ: 250 yd. zero	-1.5"	6.0"	10.7"	12.0"	8.7"	0.0"	-14.9"
TRAJ: 300 yd. zero	-1.5"	8.5"	15.7"	19.4"	18.7"	12.4"	0.0"
VELOCITY (fps)	1900	1694	1501	1330	1190	1085	1006
ENERGY (ft. lbs.)	2405	1913	1501	1178	944	784	674
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.5"	-7.1"	-17.5"	-34.0"	-57.2"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.7"	-14.4"	-30.0"	-52.5"
TRAJ: 150 yd. zero	-1.5"	2.4"	3.2"	0.0"	-8.0"	-22.1"	-43.0"
TRAJ: 200 yd. zero	-1.5"	4.4"	7.2"	6.1"	0.0"	-12.0"	-30.8"
TRAJ: 250 yd. zero	-1.5"	6.8"	12.0"	13.3"	9.6"	0.0"	-16.4"
TRAJ: 300 yd. zero	-1.5"	9.5"	17.5"	21.5"	20.6"	13.7"	0.0"
VELOCITY (fps)	1800	1605	1421	1263	1141	1049	977
ENERGY (ft. lbs.)	2159	1716	1346	1063	868	733	636
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.9"	-8.3"	-20.1"	-38.1"	-63.6"
TRAJ: 100 yd. zero	-1.5"	1.0"	0.0"	-5.4"	-16.2"	-33.2"	-57.7"
TRAJ: 150 yd. zero	-1.5"	2.8"	3.6"	0.0"	-9.0"	-24.2"	-46.9"
TRAJ: 200 yd. zero	-1.5"	5.0"	8.1"	6.8"	0.0"	-12.9"	-33.3"
TRAJ: 250 yd. zero	-1.5"	7.6"	13.3"	14.6"	10.4"	0.0"	-17.8"
TRAJ: 300 yd. zero	-1.5"	10.6"	19.3"	23.5"	22.3"	14.9"	0.0"
VELOCITY (fps)	1700	1506	1334	1194	1087	1007	943
ENERGY (ft. lbs.)	1926	1511	1186	949	788	676	592
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.3"	-9.8"	-23.2"	-43.4"	-71.4"
TRAJ: 100 yd. zero	-1.5"	1.2"	0.0"	-6.2"	-18.5"	-37.4"	-64.2"
TRAJ: 150 yd. zero	-1.5"	3.3"	4.2"	0.0"	-10.1"	-27.0"	-51.8"
TRAJ: 200 yd. zero	-1.5"	5.8"	9.3"	7.8"	0.0"	-14.3"	-36.5"
TRAJ: 250 yd. zero	-1.5"	8.7"	15.0"	16.2"	11.5"	0.0"	-19.3"
TRAJ: 300 yd. zero	-1.5"	11.9"	21.4"	25.9"	24.4"	16.1"	0.0"
VELOCITY (fps)	1600	1417	1259	1139	1047	976	912
ENERGY (ft. lbs.)	1706	1338	1057	864	731	634	554
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.9"	-11.5"	-26.6"	-49.3"	-80.2"
TRAJ: 100 yd. zero	-1.5"	1.5"	0.0"	-7.1"	-20.6"	-41.8"	-71.2"
TRAJ: 150 yd. zero	-1.5"	3.9"	4.7"	0.0"	-11.1"	-30.0"	-57.0"
TRAJ: 200 yd. zero	-1.5"	6.7"	10.3"	8.4"	0.0"	-16.0"	-40.2"
TRAJ: 250 yd. zero	-1.5"	9.9"	16.8"	18.0"	12.9"	0.0"	-20.9"
TRAJ: 300 yd. zero	-1.5"	13.4"	23.8"	26.5"	26.8"	17.5"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1500	1329	1190	1085	1005	941	881
ENERGY (ft. lbs.)	1499	1177	943	784	673	590	517
TRAJ: 50 yd. zero	-1.5"	0.0"	-3.5"	-13.1"	-30.0"	-55.0"	-89.0"
TRAJ: 100 yd. zero	-1.5"	1.8"	0.0"	-7.9"	-23.0"	-46.2"	-78.5"
TRAJ: 150 yd. zero	-1.5"	4.4"	5.3"	0.0"	-12.4"	-33.0"	-62.7"
TRAJ: 200 yd. zero	-1.5"	7.5"	11.5"	9.3"	0.0"	-17.4"	-44.0"
TRAJ: 250 yd. zero	-1.5"	11.0"	18.5"	19.8"	14.0"	0.0"	-23.0"
TRAJ: 300 yd. zero	-1.5"	14.8"	26.2"	31.4"	29.4"	19.2"	0.0"
VELOCITY (fps)	1400	1246	1129	1040	970	907	850
ENERGY (ft. lbs.)	1306	1034	850	720	627	548	481
TRAJ: 50 yd. zero	-1.5"	0.0"	-4.2"	-15.1"	-34.2"	-61.7"	-99.3"
TRAJ: 100 yd. zero	-1.5"	2.1"	0.0"	-8.8"	-25.8"	-51.2"	-86.7"
TRAJ: 150 yd. zero	-1.5"	5.1"	5.9"	0.0"	-14.0"	-36.5"	-69.0"
TRAJ: 200 yd. zero	-1.5"	8.6"	12.9"	10.5"	0.0"	-19.0"	-48.0"
TRAJ: 250 yd. zero	-1.5"	12.4"	20.5"	21.9"	15.2"	0.0"	-25.2"
TRAJ: 300 yd. zero	-1.5"	16.6"	28.9"	34.5"	32.0"	21.0"	0.0"
VELOCITY (fps)	1300	1168	1069	993	930	871	817
ENERGY (ft. lbs.)	1126	909	761	657	576	505	444
TRAJ: 50 yd. zero	-1.5"	0.0"	-4.9"	-17.4"	-38.7"	-69.4"	-111.0"
TRAJ: 100 yd. zero	-1.5"	2.5"	0.0"	-9.9"	-28.8"	-57.0"	-96.2"
TRAJ: 150 yd. zero	-1.5"	5.8"	6.7"	0.0"	-15.4"	-40.3"	-76.2"
TRAJ: 200 yd. zero	-1.5"	9.7"	14.4"	11.6"	0.0"	-21.0"	-53.0"
TRAJ: 250 yd. zero	-1.5"	13.9"	22.8"	24.2"	16.8"	0.0"	-27.8"
TRAJ: 300 yd. zero	-1.5"	18.5"	32.1"	38.1"	35.4"	23.2"	0.0"

**45 CALIBER (.458" Dia.) 350 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .238 BALLISTIC COEFFICIENT: .171

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2900	2622	2362	2120	1897	1691	1498
ENERGY (ft. lbs.)	6538	5345	4337	3495	2796	2224	1745
TRAJ: 50 yd. zero	-1.5"	0.0"	.2"	-1.2"	-4.5"	-10.5"	-19.4"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.5"	-4.9"	-10.9"	-19.9"
TRAJ: 150 yd. zero	-1.5"	.4"	1.0"	0.0"	-2.9"	-8.4"	-16.9"
TRAJ: 200 yd. zero	-1.5"	1.1"	2.5"	2.2"	0.0"	-4.7"	-12.5"
TRAJ: 250 yd. zero	-1.5"	2.1"	4.4"	5.1"	3.8"	0.0"	-8.8"
TRAJ: 300 yd. zero	-1.5"	3.2"	6.7"	8.5"	8.4"	5.7"	0.0"
VELOCITY (fps)	2800	2528	2274	2039	1822	1624	1438
ENERGY (ft. lbs.)	6095	4968	4021	3233	2580	2051	1608
TRAJ: 50 yd. zero	-1.5"	0.0"	.1"	-1.5"	-5.2"	-11.7"	-21.4"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.7"	-5.5"	-12.0"	-21.8"
TRAJ: 150 yd. zero	-1.5"	.5"	1.1"	0.0"	-3.2"	-9.1"	-18.4"
TRAJ: 200 yd. zero	-1.5"	1.3"	2.8"	2.4"	0.0"	-5.1"	-13.5"
TRAJ: 250 yd. zero	-1.5"	2.3"	4.8"	5.5"	4.1"	0.0"	-7.4"
TRAJ: 300 yd. zero	-1.5"	3.6"	7.3"	9.2"	9.0"	6.2"	0.0"
VELOCITY (fps)	2700	2434	2187	1959	1748	1558	1380
ENERGY (ft. lbs.)	5667	4607	3720	2983	2375	1888	1490
TRAJ: 50 yd. zero	-1.5"	0.0"	0.0"	-1.8"	-6.0"	-13.0"	-23.7"
TRAJ: 100 yd. zero	-1.5"	0.0"	0.0"	-1.8"	-6.0"	-13.0"	-23.7"
TRAJ: 150 yd. zero	-1.5"	.6"	1.2"	0.0"	-3.6"	-10.0"	-20.0"
TRAJ: 200 yd. zero	-1.5"	1.5"	3.0"	2.7"	0.0"	-5.4"	-14.6"
TRAJ: 250 yd. zero	-1.5"	2.6"	5.2"	6.0"	4.4"	0.0"	-8.0"
TRAJ: 300 yd. zero	-1.5"	4.0"	7.9"	10.0"	9.8"	6.7"	0.0"
VELOCITY (fps)	2600	2341	2101	1879	1676	1484	1315
ENERGY (ft. lbs.)	5255	4261	3432	2745	2182	1712	1345
TRAJ: 50 yd. zero	-1.5"	0.0"	-.1"	-2.3"	-6.9"	-14.7"	-26.5"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.0"	-6.6"	-14.3"	-26.0"
TRAJ: 150 yd. zero	-1.5"	.8"	1.4"	0.0"	-3.8"	-10.8"	-21.9"
TRAJ: 200 yd. zero	-1.5"	1.7"	3.3"	2.9"	0.0"	-6.0"	-16.0"
TRAJ: 250 yd. zero	-1.5"	2.9"	5.7"	6.5"	4.8"	0.0"	-8.8"
TRAJ: 300 yd. zero	-1.5"	4.4"	8.7"	11.0"	10.7"	7.4"	0.0"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2500	2248	2015	1800	1604	1421	1263
ENERGY (ft. lbs.)	4850	3930	3157	2517	2001	1509	1239
TRAJ: 50 yd. zero	-1.5"	0.0"	-2"	-2.7"	-8.0"	-16.7"	-29.7"
TRAJ: 100 yd. zero	-1.5"	.1"	0.0"	-2.3"	-7.5"	-16.0"	-29.0"
TRAJ: 150 yd. zero	-1.5"	.9"	1.6"	0.0"	-4.3"	-12.1"	-24.2"
TRAJ: 200 yd. zero	-1.5"	2.0"	3.8"	3.3"	0.0"	-6.6"	-17.6"
TRAJ: 250 yd. zero	-1.5"	3.3"	6.4"	7.3"	5.3"	0.0"	-9.7"
TRAJ: 300 yd. zero	-1.5"	5.0"	9.7"	12.1"	11.8"	8.1"	0.0"
VELOCITY (fps)	2400	2158	1929	1721	1534	1359	1213
ENERGY (ft. lbs.)	4478	3612	2894	2302	1830	1435	1143
TRAJ: 50 yd. zero	-1.5"	0.0"	-.4"	-3.2"	-9.1"	-18.7"	-33.0"
TRAJ: 100 yd. zero	-1.5"	.2"	0.0"	-2.5"	-8.2"	-17.6"	-31.7"
TRAJ: 150 yd. zero	-1.5"	1.1"	1.7"	0.0"	-4.7"	-13.3"	-26.5"
TRAJ: 200 yd. zero	-1.5"	2.3"	4.1"	3.6"	0.0"	-7.3"	-19.3"
TRAJ: 250 yd. zero	-1.5"	3.7"	7.0"	8.0"	5.9"	0.0"	-10.5"
TRAJ: 300 yd. zero	-1.5"	5.5"	10.6"	13.3"	12.9"	8.8"	0.0"
VELOCITY (fps)	2300	2063	1844	1644	1456	1292	1182
ENERGY (ft. lbs.)	4112	3308	2642	2100	1647	1297	1050
TRAJ: 50 yd. zero	-1.5"	0.0"	-.5"	-3.7"	-10.1"	-20.7"	-36.4"
TRAJ: 100 yd. zero	-1.5"	.3"	0.0"	-2.8"	-9.0"	-19.3"	-34.7"
TRAJ: 150 yd. zero	-1.5"	1.2"	1.9"	0.0"	-5.2"	-14.5"	-28.9"
TRAJ: 200 yd. zero	-1.5"	2.5"	4.5"	3.9"	0.0"	-8.0"	-21.1"
TRAJ: 250 yd. zero	-1.5"	4.2"	7.7"	8.7"	6.4"	0.0"	-11.5"
TRAJ: 300 yd. zero	-1.5"	6.1"	11.6"	14.5"	14.1"	9.6"	0.0"
VELOCITY (fps)	2200	1970	1758	1568	1388	1236	1117
ENERGY (ft. lbs.)	3762	3018	2404	1911	1498	1188	971
TRAJ: 50 yd. zero	-1.5"	0.0"	-.8"	-4.5"	-11.8"	-23.5"	-40.7"
TRAJ: 100 yd. zero	-1.5"	.4"	0.0"	-3.3"	-10.2"	-21.5"	-38.3"
TRAJ: 150 yd. zero	-1.5"	1.5"	2.2"	0.0"	-5.7"	-15.9"	-31.6"
TRAJ: 200 yd. zero	-1.5"	3.0"	5.1"	4.3"	0.0"	-8.8"	-23.0"
TRAJ: 250 yd. zero	-1.5"	4.7"	8.6"	9.6"	7.1"	0.0"	-12.4"
TRAJ: 300 yd. zero	-1.5"	6.8"	12.8"	15.8"	15.4"	10.4"	0.0"
VELOCITY (fps)	2100	1878	1674	1483	1314	1179	1077
ENERGY (ft. lbs.)	3428	2741	2180	1710	1343	1080	901
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.0"	-5.1"	-13.4"	-26.7"	-45.8"
TRAJ: 100 yd. zero	-1.5"	.5"	0.0"	-3.6"	-11.3"	-24.2"	-42.7"
TRAJ: 150 yd. zero	-1.5"	1.7"	2.4"	0.0"	-6.4"	-18.1"	-35.4"
TRAJ: 200 yd. zero	-1.5"	3.4"	5.7"	4.9"	0.0"	-10.0"	-25.7"
TRAJ: 250 yd. zero	-1.5"	5.4"	9.7"	10.9"	8.0"	0.0"	-13.7"
TRAJ: 300 yd. zero	-1.5"	7.6"	14.3"	17.7"	17.1"	11.4"	0.0"
VELOCITY (fps)	2000	1786	1592	1410	1254	1135	1044
ENERGY (ft. lbs.)	3109	2478	1970	1545	1222	1001	847
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.2"	-6.0"	-15.2"	-29.9"	-50.8"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.1"	-12.6"	-26.7"	-47.0"
TRAJ: 150 yd. zero	-1.5"	2.0"	2.7"	0.0"	-7.2"	-19.9"	-38.8"
TRAJ: 200 yd. zero	-1.5"	3.8"	6.3"	5.4"	0.0"	-10.9"	-28.0"
TRAJ: 250 yd. zero	-1.5"	6.0"	10.7"	12.0"	8.7"	0.0"	-14.9"
TRAJ: 300 yd. zero	-1.5"	8.5"	15.7"	19.4"	18.7"	12.4"	0.0"
VELOCITY (fps)	1900	1694	1501	1330	1190	1085	1006
ENERGY (ft. lbs.)	2806	2232	1751	1374	1101	915	786
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.5"	-7.1"	-17.5"	-34.0"	-57.2"
TRAJ: 100 yd. zero	-1.5"	.8"	0.0"	-4.7"	-14.4"	-30.0"	-52.5"
TRAJ: 150 yd. zero	-1.5"	2.4"	3.2"	0.0"	-8.0"	-22.1"	-43.0"
TRAJ: 200 yd. zero	-1.5"	4.4"	7.2"	6.1"	0.0"	-12.0"	-30.8"
TRAJ: 250 yd. zero	-1.5"	6.8"	12.0"	13.3"	9.6"	0.0"	-16.4"
TRAJ: 300 yd. zero	-1.5"	9.5"	17.5"	21.5"	20.6"	13.7"	0.0"
VELOCITY (fps)	1800	1605	1421	1263	1141	1049	977
ENERGY (ft. lbs.)	2519	2002	1570	1240	1013	855	742
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.9"	-8.3"	-20.1"	-38.1"	-63.6"
TRAJ: 100 yd. zero	-1.5"	1.0"	0.0"	-5.4"	-16.2"	-33.2"	-57.7"
TRAJ: 150 yd. zero	-1.5"	2.8"	3.6"	0.0"	-9.0"	-24.2"	-46.9"
TRAJ: 200 yd. zero	-1.5"	5.0"	8.1"	6.8"	0.0"	-12.9"	-33.3"
TRAJ: 250 yd. zero	-1.5"	7.8"	13.3"	14.6"	10.4"	0.0"	-17.8"
TRAJ: 300 yd. zero	-1.5"	10.6"	19.3"	23.5"	22.3"	14.9"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1700	1506	1334	1194	1087	1007	943
ENERGY (ft. lbs.)	2447	1762	1383	1107	919	789	691
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.3"	-9.8"	-23.2"	-43.4"	-71.4"
TRAJ: 100 yd. zero	-1.5"	1.2"	0.0"	-6.2"	-18.5"	-37.4"	-64.2"
TRAJ: 150 yd. zero	-1.5"	3.3"	4.2"	0.0"	-10.1"	-27.0"	-51.8"
TRAJ: 200 yd. zero	-1.5"	5.8"	9.3"	7.6"	0.0"	-14.3"	-36.5"
TRAJ: 250 yd. zero	-1.5"	8.7"	15.0"	16.2"	11.5"	0.0"	-19.3"
TRAJ: 300 yd. zero	-1.5"	11.9"	21.4"	25.9"	24.4"	16.1"	0.0"
VELOCITY (fps)	1800	1417	1259	1139	1047	976	912
ENERGY (ft. lbs.)	1990	1561	1233	1008	852	740	647
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.9"	-11.5"	-26.6"	-49.3"	-80.2"
TRAJ: 100 yd. zero	-1.5"	1.5"	0.0"	-7.1"	-20.6"	-41.8"	-71.2"
TRAJ: 150 yd. zero	-1.5"	3.9"	4.7"	0.0"	-11.1"	-30.0"	-57.0"
TRAJ: 200 yd. zero	-1.5"	6.7"	10.3"	8.4"	0.0"	-16.0"	-40.2"
TRAJ: 250 yd. zero	-1.5"	9.9"	16.8"	18.0"	12.9"	0.0"	-20.9"
TRAJ: 300 yd. zero	-1.5"	13.4"	23.8"	28.5"	26.8"	17.5"	0.0"
VELOCITY (fps)	1500	1329	1190	1085	1005	941	881
ENERGY (ft. lbs.)	1749	1373	1100	914	786	688	603
TRAJ: 50 yd. zero	-1.5"	0.0"	-3.5"	-13.1"	-30.0"	-55.0"	-89.0"
TRAJ: 100 yd. zero	-1.5"	1.8"	0.0"	-7.9"	-23.0"	-46.2"	-78.5"
TRAJ: 150 yd. zero	-1.5"	4.4"	5.3"	0.0"	-12.4"	-33.0"	-62.7"
TRAJ: 200 yd. zero	-1.5"	7.5"	11.5"	9.3"	0.0"	-17.4"	-44.0"
TRAJ: 250 yd. zero	-1.5"	11.0"	18.5"	19.8"	14.0"	0.0"	-23.0"
TRAJ: 300 yd. zero	-1.5"	14.8"	26.2"	31.4"	29.4"	19.2"	0.0"

**45 Caliber (.458" Dia.) 500 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .341 BALLISTIC COEFFICIENT: .297

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2304	2032	1784	1563	1360	1196
ENERGY (ft. lbs.)	7507	5894	4586	3534	2713	2055	1590
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.2"	-19.0"	-44.2"	-83.9"	-142.0"
TRAJ: 200 yd. zero	-1.5"	2.8"	0.0"	-11.1"	-33.8"	-70.8"	-126.3"
TRAJ: 300 yd. zero	-1.5"	6.3"	7.5"	0.0"	-18.8"	-52.1"	-103.9"
TRAJ: 400 yd. zero	-1.5"	11.1"	16.9"	14.2"	0.0"	-28.5"	-75.6"
TRAJ: 500 yd. zero	-1.5"	16.8"	28.3"	31.3"	22.8"	0.0"	-41.3"
TRAJ: 600 yd. zero	-1.5"	23.7"	42.1"	52.0"	50.4"	34.5"	0.0"
VELOCITY (fps)	2500	2212	1948	1708	1487	1296	1150
ENERGY (ft. lbs.)	6941	5433	4214	3240	2455	1865	1470
TRAJ: 100 yd. zero	-1.5"	0.0"	-5.7"	-20.6"	-47.7"	-90.9"	-154.7"
TRAJ: 200 yd. zero	-1.5"	2.9"	0.0"	-12.0"	-36.3"	-76.8"	-137.5"
TRAJ: 300 yd. zero	-1.5"	6.9"	8.1"	0.0"	-20.1"	-56.4"	-113.3"
TRAJ: 400 yd. zero	-1.5"	11.9"	18.2"	15.1"	0.0"	-31.2"	-83.0"
TRAJ: 500 yd. zero	-1.5"	18.2"	30.7"	33.9"	25.0"	0.0"	-45.5"
TRAJ: 600 yd. zero	-1.5"	25.8"	45.9"	56.7"	55.4"	38.0"	0.0"
VELOCITY (fps)	2400	2120	1864	1634	1422	1244	1110
ENERGY (ft. lbs.)	6397	4992	3859	2963	2245	1717	1368
TRAJ: 100 yd. zero	-1.5"	0.0"	-6.4"	-23.4"	-53.2"	-100.7"	-169.9"
TRAJ: 200 yd. zero	-1.5"	3.2"	0.0"	-13.6"	-40.2"	-84.5"	-150.4"
TRAJ: 300 yd. zero	-1.5"	7.8"	9.1"	0.0"	-22.0"	-61.7"	-123.0"
TRAJ: 400 yd. zero	-1.5"	13.3"	20.1"	16.5"	0.0"	-34.1"	-89.9"
TRAJ: 500 yd. zero	-1.5"	20.2"	33.8"	37.0"	27.3"	0.0"	-48.9"
TRAJ: 600 yd. zero	-1.5"	28.3"	50.1"	61.5"	60.0"	40.8"	0.0"
VELOCITY (fps)	2300	2029	1781	1560	1358	1195	1077
ENERGY (ft. lbs.)	5875	4570	3521	2703	2048	1585	1287
TRAJ: 100 yd. zero	-1.5"	0.0"	-7.1"	-25.7"	-58.5"	-110.5"	-185.3"
TRAJ: 200 yd. zero	-1.5"	3.6"	0.0"	-15.0"	-44.2"	-92.7"	-163.8"
TRAJ: 300 yd. zero	-1.5"	8.6"	10.0"	0.0"	-24.1"	-67.5"	-133.7"
TRAJ: 400 yd. zero	-1.5"	14.6"	22.1"	18.1"	0.0"	-37.4"	-97.5"
TRAJ: 500 yd. zero	-1.5"	22.1"	37.1"	40.6"	29.9"	0.0"	-52.6"
TRAJ: 600 yd. zero	-1.5"	30.9"	54.6"	66.9"	65.0"	43.8"	0.0"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2200	1937	1698	1478	1289	1146	1042
ENERGY (ft. lbs.)	5375	4167	3203	2427	1845	1457	1206
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 7.9"	- 28.3"	- 64.8"	- 121.9"	- 203.0"
TRAJ: 200 yd. zero	- 1.5"	4.0"	0.0"	- 16.3"	- 48.7"	- 102.1"	- 179.2"
TRAJ: 300 yd. zero	- 1.5"	9.4"	10.9"	0.0"	- 26.9"	- 74.8"	- 146.4"
TRAJ: 400 yd. zero	- 1.5"	16.2"	24.4"	20.2"	0.0"	- 41.1"	- 106.0"
TRAJ: 500 yd. zero	- 1.5"	24.4"	40.9"	44.9"	32.9"	0.0"	- 56.6"
TRAJ: 600 yd. zero	- 1.5"	33.8"	59.7"	73.2"	70.7"	47.2"	0.0"
VELOCITY (fps)	2100	1846	1617	1408	1232	1102	1010
ENERGY (ft. lbs.)	4897	3783	2905	2200	1686	1349	1133
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 8.9"	- 31.2"	- 71.7"	- 134.3"	- 222.8"
TRAJ: 200 yd. zero	- 1.5"	4.5"	0.0"	- 17.8"	- 53.9"	- 112.0"	- 196.0"
TRAJ: 300 yd. zero	- 1.5"	10.4"	11.9"	0.0"	- 30.0"	- 82.2"	- 160.3"
TRAJ: 400 yd. zero	- 1.5"	17.9"	27.0"	22.6"	0.0"	- 44.6"	- 115.1"
TRAJ: 500 yd. zero	- 1.5"	26.9"	44.8"	49.4"	35.7"	0.0"	- 61.5"
TRAJ: 600 yd. zero	- 1.5"	37.1"	65.4"	80.2"	76.8"	51.3"	0.0"
VELOCITY (fps)	2000	1755	1538	1339	1181	1067	983
ENERGY (ft. lbs.)	4442	3420	2625	1990	1548	1264	1074
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 10.1"	- 35.2"	- 80.2"	- 148.1"	- 243.8"
TRAJ: 200 yd. zero	- 1.5"	5.1"	0.0"	- 20.0"	- 59.9"	- 122.8"	- 213.4"
TRAJ: 300 yd. zero	- 1.5"	11.7"	13.3"	0.0"	- 33.2"	- 89.4"	- 173.3"
TRAJ: 400 yd. zero	- 1.5"	20.1"	30.0"	24.9"	0.0"	- 47.9"	- 123.4"
TRAJ: 500 yd. zero	- 1.5"	29.6"	49.1"	53.7"	38.3"	0.0"	- 66.0"
TRAJ: 600 yd. zero	- 1.5"	40.6"	71.1"	86.7"	82.3"	55.0"	0.0"
VELOCITY (fps)	1900	1665	1449	1266	1130	1030	955
ENERGY (ft. lbs.)	4009	3079	2333	1779	1417	1179	1013
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 11.3"	- 39.5"	- 89.4"	- 164.9"	- 270.0"
TRAJ: 200 yd. zero	- 1.5"	5.7"	0.0"	- 22.5"	- 66.8"	- 136.6"	- 236.0"
TRAJ: 300 yd. zero	- 1.5"	13.2"	15.0"	0.0"	- 36.7"	- 99.0"	- 190.9"
TRAJ: 400 yd. zero	- 1.5"	22.4"	33.4"	27.6"	0.0"	- 53.1"	- 135.8"
TRAJ: 500 yd. zero	- 1.5"	33.0"	54.6"	59.4"	42.5"	0.0"	- 72.0"
TRAJ: 600 yd. zero	- 1.5"	45.0"	78.7"	95.5"	90.5"	60.1"	0.0"
VELOCITY (fps)	1800	1577	1373	1205	1084	997	926
ENERGY (ft. lbs.)	3598	2762	2092	1614	1305	1103	953
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 12.7"	- 44.0"	- 99.9"	- 182.2"	- 297.4"
TRAJ: 200 yd. zero	- 1.5"	6.4"	0.0"	- 24.9"	- 73.6"	- 150.4"	- 259.2"
TRAJ: 300 yd. zero	- 1.5"	14.7"	16.7"	0.0"	- 40.2"	- 108.8"	- 209.2"
TRAJ: 400 yd. zero	- 1.5"	24.8"	36.8"	30.2"	0.0"	- 58.4"	- 148.8"
TRAJ: 500 yd. zero	- 1.5"	36.4"	60.2"	65.3"	46.7"	0.0"	- 78.7"
TRAJ: 600 yd. zero	- 1.5"	49.6"	86.4"	104.6"	99.2"	65.6"	0.0"
VELOCITY (fps)	1700	1480	1290	1146	1043	965	896
ENERGY (ft. lbs.)	3209	2432	1849	1460	1207	1034	891
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 14.6"	- 50.3"	- 110.9"	- 201.8"	- 326.4"
TRAJ: 200 yd. zero	- 1.5"	7.3"	0.0"	- 28.4"	- 81.6"	- 165.2"	- 282.5"
TRAJ: 300 yd. zero	- 1.5"	16.8"	18.9"	0.0"	- 43.8"	- 117.9"	- 225.7"
TRAJ: 400 yd. zero	- 1.5"	27.7"	40.8"	32.9"	0.0"	- 63.1"	- 160.0"
TRAJ: 500 yd. zero	- 1.5"	40.4"	66.1"	70.8"	50.5"	0.0"	- 84.2"
TRAJ: 600 yd. zero	- 1.5"	54.4"	94.2"	112.9"	106.7"	70.2"	0.0"
VELOCITY (fps)	1600	1392	1221	1094	1004	933	868
ENERGY (ft. lbs.)	2843	2153	1655	1330	1120	967	836
TRAJ: 100 yd. zero	- 1.5"	0.0"	- 16.7"	- 56.8"	- 125.3"	- 224.3"	- 359.5"
TRAJ: 200 yd. zero	- 1.5"	8.4"	0.0"	- 31.7"	- 91.8"	- 182.5"	- 309.4"
TRAJ: 300 yd. zero	- 1.5"	19.0"	21.2"	0.0"	- 49.4"	- 129.5"	- 245.8"
TRAJ: 400 yd. zero	- 1.5"	31.3"	45.9"	37.1"	0.0"	- 67.7"	- 171.6"
TRAJ: 500 yd. zero	- 1.5"	44.9"	73.0"	77.8"	54.2"	0.0"	- 90.3"
TRAJ: 600 yd. zero	- 1.5"	59.9"	103.2"	122.9"	114.4"	75.3"	0.0"



## 45 Caliber (.458" Dia.) 500 GRAIN FULL METAL JACKET

SECTIONAL DENSITY: .341 BALLISTIC COEFFICIENT: .320

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2600	2459	2324	2194	2070	1950	1835
ENERGY (ft. lbs.)	7507	6717	5999	5347	4756	4222	3740
TRAJ: 50 yd. zero	- 1.5"	0.0"	0.0"	- 1.6"	- 5.0"	- 10.5"	- 18.3"
TRAJ: 100 yd. zero	- 1.5"	0.0"	0.0"	- 1.5"	- 5.0"	- 10.4"	- 18.2"
TRAJ: 150 yd. zero	- 1.5"	.5"	1.1"	0.0"	- 2.8"	- 7.8"	- 15.0"
TRAJ: 200 yd. zero	- 1.5"	1.3"	2.5"	2.2"	0.0"	- 4.2"	- 10.7"
TRAJ: 250 yd. zero	- 1.5"	2.1"	4.2"	4.7"	3.4"	0.0"	- 5.6"
TRAJ: 300 yd. zero	- 1.5"	3.1"	6.1"	7.5"	7.2"	4.7"	0.0"
VELOCITY (fps)	2500	2363	2232	2106	1984	1868	1757
ENERGY (ft. lbs.)	6941	6202	5531	4923	4373	3876	3430
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .1"	- 2.0"	- 6.1"	- 12.4"	- 21.4"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 1.8"	- 5.8"	- 12.1"	- 21.1"
TRAJ: 150 yd. zero	- 1.5"	.7"	1.3"	0.0"	- 3.3"	- 8.9"	- 17.3"
TRAJ: 200 yd. zero	- 1.5"	1.5"	2.9"	2.5"	0.0"	- 4.8"	- 12.3"
TRAJ: 250 yd. zero	- 1.5"	2.5"	4.9"	5.4"	3.9"	0.0"	- 6.5"
TRAJ: 300 yd. zero	- 1.5"	3.6"	7.0"	8.7"	8.2"	5.4"	0.0"
VELOCITY (fps)	2400	2267	2139	2017	1900	1787	1681
ENERGY (ft. lbs.)	6397	5708	5083	4518	4007	3546	3137
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .2"	- 2.4"	- 6.8"	- 13.8"	- 23.7"
TRAJ: 100 yd. zero	- 1.5"	.1"	0.0"	- 2.0"	- 6.4"	- 13.2"	- 22.9"
TRAJ: 150 yd. zero	- 1.5"	.8"	1.4"	0.0"	- 3.6"	- 9.7"	- 18.7"
TRAJ: 200 yd. zero	- 1.5"	1.7"	3.2"	2.7"	0.0"	- 5.2"	- 13.3"
TRAJ: 250 yd. zero	- 1.5"	2.8"	5.3"	5.8"	4.2"	0.0"	- 7.1"
TRAJ: 300 yd. zero	- 1.5"	4.0"	7.7"	9.4"	8.9"	5.9"	0.0"
VELOCITY (fps)	2300	2171	2047	1929	1815	1707	1605
ENERGY (ft. lbs.)	5875	5234	4655	4130	3657	3235	2861
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .3"	- 2.8"	- 7.7"	- 15.4"	- 26.2"
TRAJ: 100 yd. zero	- 1.5"	.2"	0.0"	- 2.3"	- 7.0"	- 14.4"	- 25.1"
TRAJ: 150 yd. zero	- 1.5"	1.0"	1.5"	0.0"	- 3.9"	- 10.6"	- 20.5"
TRAJ: 200 yd. zero	- 1.5"	1.9"	3.5"	2.9"	0.0"	- 5.7"	- 14.6"
TRAJ: 250 yd. zero	- 1.5"	3.1"	5.8"	6.4"	4.6"	0.0"	- 7.7"
TRAJ: 300 yd. zero	- 1.5"	4.4"	8.4"	10.3"	9.8"	6.5"	0.0"
VELOCITY (fps)	2200	2075	1955	1840	1731	1628	1531
ENERGY (ft. lbs.)	5375	4782	4245	3761	3327	2943	2603
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .5"	- 3.3"	- 8.7"	- 17.2"	- 29.3"
TRAJ: 100 yd. zero	- 1.5"	.3"	0.0"	- 2.5"	- 7.7"	- 15.9"	- 27.7"
TRAJ: 150 yd. zero	- 1.5"	1.1"	1.7"	0.0"	- 4.3"	- 11.6"	- 22.6"
TRAJ: 200 yd. zero	- 1.5"	2.2"	3.9"	3.2"	0.0"	- 6.3"	- 16.1"
TRAJ: 250 yd. zero	- 1.5"	3.5"	6.4"	7.0"	5.0"	0.0"	- 8.5"
TRAJ: 300 yd. zero	- 1.5"	4.9"	9.2"	11.3"	10.8"	7.1"	0.0"
VELOCITY (fps)	2100	1979	1883	1752	1648	1550	1448
ENERGY (ft. lbs.)	4897	4350	3855	3411	3017	2668	2329
TRAJ: 50 yd. zero	- 1.5"	0.0"	- .8"	- 4.3"	- 10.6"	- 20.3"	- 33.5"
TRAJ: 100 yd. zero	- 1.5"	.4"	0.0"	- 3.0"	- 8.9"	- 18.1"	- 30.9"
TRAJ: 150 yd. zero	- 1.5"	1.5"	2.1"	0.0"	- 4.8"	- 13.0"	- 24.8"
TRAJ: 200 yd. zero	- 1.5"	2.7"	4.5"	3.6"	0.0"	- 6.9"	- 17.5"
TRAJ: 250 yd. zero	- 1.5"	4.1"	7.3"	7.8"	5.6"	0.0"	- 9.1"
TRAJ: 300 yd. zero	- 1.5"	5.6"	10.3"	12.4"	11.7"	7.6"	0.0"
VELOCITY (fps)	2000	1883	1771	1666	1567	1464	1367
ENERGY (ft. lbs.)	4442	3939	3485	3083	2727	2380	2076
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.0"	- 5.1"	- 12.2"	- 23.1"	- 38.0"
TRAJ: 100 yd. zero	- 1.5"	.5"	0.0"	- 3.5"	- 10.1"	- 20.4"	- 34.8"
TRAJ: 150 yd. zero	- 1.5"	1.7"	2.4"	0.0"	- 5.4"	- 14.5"	- 27.8"
TRAJ: 200 yd. zero	- 1.5"	3.1"	5.1"	4.1"	0.0"	- 7.8"	- 19.6"
TRAJ: 250 yd. zero	- 1.5"	4.6"	8.2"	8.7"	6.3"	0.0"	- 10.3"
TRAJ: 300 yd. zero	- 1.5"	6.3"	11.6"	13.9"	13.1"	8.6"	0.0"
VELOCITY (fps)	1900	1787	1681	1581	1477	1380	1291
ENERGY (ft. lbs.)	4009	3548	3138	2776	2423	2114	1850
TRAJ: 50 yd. zero	- 1.5"	0.0"	- 1.3"	- 6.0"	- 14.2"	- 26.6"	- 43.6"
TRAJ: 100 yd. zero	- 1.5"	.7"	0.0"	- 4.0"	- 11.4"	- 23.2"	- 39.5"
TRAJ: 150 yd. zero	- 1.5"	2.0"	2.7"	0.0"	- 6.0"	- 16.5"	- 31.4"
TRAJ: 200 yd. zero	- 1.5"	3.6"	5.7"	4.6"	0.0"	- 8.8"	- 22.3"
TRAJ: 250 yd. zero	- 1.5"	5.3"	9.3"	9.9"	7.1"	0.0"	- 11.6"
TRAJ: 300 yd. zero	- 1.5"	7.3"	13.2"	15.7"	14.9"	9.7"	0.0"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1693	1592	1488	1389	1299	1219
ENERGY (ft. lbs.)	3598	3183	2815	2457	2144	1875	1651
TRAJ: 50 yd. zero	-1.5"	0.0"	-1.7"	-6.8"	-16.2"	-29.9"	-49.4"
TRAJ: 100 yd. zero	-1.5"	.9"	0.0"	-4.2"	-12.7"	-25.5"	-44.1"
TRAJ: 150 yd. zero	-1.5"	2.3"	2.8"	0.0"	-7.0"	-18.4"	-35.6"
TRAJ: 200 yd. zero	-1.5"	4.1"	6.4"	5.3"	0.0"	-9.6"	-25.1"
TRAJ: 250 yd. zero	-1.5"	6.0"	10.2"	11.1"	7.7"	0.0"	-13.5"
TRAJ: 300 yd. zero	-1.5"	8.2"	14.7"	17.8"	16.7"	11.3"	0.0"
VELOCITY (fps)	1700	1599	1494	1395	1305	1224	1156
ENERGY (ft. lbs.)	3209	2839	2478	2162	1890	1664	1484
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.0"	-8.1"	-18.9"	-34.9"	-57.2"
TRAJ: 100 yd. zero	-1.5"	1.0"	0.0"	-5.0"	-14.7"	-29.8"	-51.0"
TRAJ: 150 yd. zero	-1.5"	2.7"	3.4"	0.0"	-8.0"	-21.4"	-40.9"
TRAJ: 200 yd. zero	-1.5"	4.7"	7.4"	6.0"	0.0"	-11.3"	-28.8"
TRAJ: 250 yd. zero	-1.5"	7.0"	11.9"	12.9"	9.1"	0.0"	-15.2"
TRAJ: 300 yd. zero	-1.5"	9.5"	17.0"	20.5"	19.3"	12.7"	0.0"
VELOCITY (fps)	1600	1495	1396	1306	1225	1157	1095
ENERGY (ft. lbs.)	2843	2482	2165	1893	1666	1486	1331
TRAJ: 50 yd. zero	-1.5"	0.0"	-2.5"	-9.6"	-22.1"	-40.6"	-65.4"
TRAJ: 100 yd. zero	-1.5"	1.3"	0.0"	-5.9"	-17.1"	-34.4"	-57.9"
TRAJ: 150 yd. zero	-1.5"	3.2"	3.9"	0.0"	-9.2"	-24.5"	-46.1"
TRAJ: 200 yd. zero	-1.5"	5.5"	8.6"	6.9"	0.0"	-13.0"	-32.2"
TRAJ: 250 yd. zero	-1.5"	8.1"	13.8"	14.7"	10.4"	0.0"	-16.6"
TRAJ: 300 yd. zero	-1.5"	10.9"	19.3"	23.1"	21.5"	13.9"	0.0"

## TRAJECTORY TABLES (LONG RANGE RIFLE)

6 MM (.243" Dia.) 87 GRAIN BOAT TAIL HOLLOW POINT

SECTIONAL DENSITY: .210 BALLISTIC COEFFICIENT: .363

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3600	3022	2753	2262	2041	1319
ENERGY (ft. lbs.)	2504	1764	1465	989	805	336
TRAJ: 200 yd. zero	-1.5"	0.0"	-4.7"	-29.2"	-51.4"	-244.3"
TRAJ: 300 yd. zero	-1.5"	3.2"	0.0"	-21.3"	-41.9"	-228.5"
TRAJ: 500 yd. zero	-1.5"	11.7"	12.8"	0.0"	-16.3"	-185.8"
TRAJ: 600 yd. zero	-1.5"	17.1"	21.0"	13.6"	0.0"	-158.6"
TRAJ: 1000 yd. zero	-1.5"	48.9"	68.6"	92.9"	95.2"	0.0"
VELOCITY (fps)	3500	2931	2667	2187	1971	1275
ENERGY (ft. lbs.)	2367	1660	1375	924	750	314
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.0"	-31.2"	-55.0"	-262.2"
TRAJ: 300 yd. zero	-1.5"	3.4"	0.0"	-22.8"	-44.9"	-245.3"
TRAJ: 500 yd. zero	-1.5"	12.5"	13.7"	0.0"	-17.5"	-199.6"
TRAJ: 600 yd. zero	-1.5"	18.4"	22.5"	14.6"	0.0"	-170.4"
TRAJ: 1000 yd. zero	-1.5"	52.4"	73.6"	99.8"	102.3"	0.0"
VELOCITY (fps)	3400	2840	2581	2112	1901	1234
ENERGY (ft. lbs.)	2234	1559	1288	862	699	294
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.4"	-33.1"	-56.6"	-280.4"
TRAJ: 300 yd. zero	-1.5"	3.6"	0.0"	-24.1"	-47.7"	-262.3"
TRAJ: 500 yd. zero	-1.5"	13.3"	14.5"	0.0"	-18.7"	-214.0"
TRAJ: 600 yd. zero	-1.5"	19.5"	23.9"	15.7"	0.0"	-182.7"
TRAJ: 1000 yd. zero	-1.5"	56.1"	78.7"	107.0"	109.7"	0.0"
VELOCITY (fps)	3300	2750	2496	2038	1833	1195
ENERGY (ft. lbs.)	2104	1481	1204	802	649	276
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.8"	-35.7"	-63.1"	-299.8"
TRAJ: 300 yd. zero	-1.5"	3.9"	0.0"	-25.9"	-51.4"	-280.3"
TRAJ: 500 yd. zero	-1.5"	14.3"	15.6"	0.0"	-20.2"	-228.3"
TRAJ: 600 yd. zero	-1.5"	21.0"	25.7"	16.8"	0.0"	-194.6"
TRAJ: 1000 yd. zero	-1.5"	60.0"	84.1"	114.2"	116.8"	0.0"
VELOCITY (fps)	3200	2660	2411	1964	1765	1161
ENERGY (ft. lbs.)	1979	1367	1124	746	602	260
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.3"	-38.5"	-67.3"	-321.7"
TRAJ: 300 yd. zero	-1.5"	4.2"	0.0"	-28.0"	-54.7"	-300.6"
TRAJ: 500 yd. zero	-1.5"	15.4"	16.8"	0.0"	-21.0"	-244.5"
TRAJ: 600 yd. zero	-1.5"	22.5"	27.4"	17.5"	0.0"	-209.4"
TRAJ: 1000 yd. zero	-1.5"	64.4"	90.2"	122.3"	125.7"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2569	2327	1892	1698	1129
ENERGY (ft. lbs.)	1857	1276	1047	691	557	246
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.8"	- 41.7"	- 73.0"	- 346.8"
TRAJ: 300 yd. zero	- 1.5"	4.6"	0.0"	- 30.3"	- 59.3"	- 323.9"
TRAJ: 500 yd. zero	- 1.5"	16.7"	18.2"	0.0"	- 22.8"	- 263.2"
TRAJ: 600 yd. zero	- 1.5"	24.4"	29.7"	19.1"	0.0"	- 225.1"
TRAJ: 1000 yd. zero	- 1.5"	69.4"	97.2"	131.6"	135.1"	0.0"
VELOCITY (fps)	3000	2480	2244	1820	1633	1096
ENERGY (ft. lbs.)	1739	1188	973	640	515	232
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.4"	- 44.7"	- 78.7"	- 371.8"
TRAJ: 300 yd. zero	- 1.5"	5.0"	0.0"	- 32.2"	- 63.7"	- 346.8"
TRAJ: 500 yd. zero	- 1.5"	17.9"	19.4"	0.0"	- 25.0"	- 282.3"
TRAJ: 600 yd. zero	- 1.5"	26.3"	31.9"	20.9"	0.0"	- 240.5"
TRAJ: 1000 yd. zero	- 1.5"	74.4"	104.1"	141.2"	144.3"	0.0"
VELOCITY (fps)	2900	2391	2161	1749	1569	1069
ENERGY (ft. lbs.)	1625	1105	902	591	476	221
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.1"	- 48.6"	- 84.9"	- 399.6"
TRAJ: 300 yd. zero	- 1.5"	5.4"	0.0"	- 35.0"	- 68.6"	- 372.4"
TRAJ: 500 yd. zero	- 1.5"	19.5"	21.1"	0.0"	- 26.5"	- 302.2"
TRAJ: 600 yd. zero	- 1.5"	28.3"	34.3"	22.1"	0.0"	- 258.0"
TRAJ: 1000 yd. zero	- 1.5"	79.9"	111.7"	151.1"	154.8"	0.0"
VELOCITY (fps)	2800	2303	2079	1679	1497	1041
ENERGY (ft. lbs.)	1515	1025	835	545	433	210
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.6"	- 51.9"	- 91.0"	- 430.9"
TRAJ: 300 yd. zero	- 1.5"	5.7"	0.0"	- 37.6"	- 73.7"	- 402.2"
TRAJ: 500 yd. zero	- 1.5"	20.8"	22.6"	0.0"	- 28.6"	- 327.0"
TRAJ: 600 yd. zero	- 1.5"	30.3"	36.9"	23.9"	0.0"	- 279.2"
TRAJ: 1000 yd. zero	- 1.5"	86.2"	120.7"	163.5"	167.6"	0.0"
VELOCITY (fps)	2700	2215	1997	1611	1436	1019
ENERGY (ft. lbs.)	1409	948	771	501	399	201
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.4"	- 57.1"	- 99.6"	- 464.5"
TRAJ: 300 yd. zero	- 1.5"	6.3"	0.0"	- 41.4"	- 80.7"	- 433.0"
TRAJ: 500 yd. zero	- 1.5"	22.9"	24.9"	0.0"	- 31.0"	- 350.2"
TRAJ: 600 yd. zero	- 1.5"	33.2"	40.4"	25.9"	0.0"	- 298.4"
TRAJ: 1000 yd. zero	- 1.5"	92.9"	129.9"	175.1"	179.1"	0.0"
VELOCITY (fps)	2600	2128	1916	1544	1377	998
ENERGY (ft. lbs.)	1306	875	710	461	366	192
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.3"	- 62.2"	- 109.1"	- 503.8"
TRAJ: 300 yd. zero	- 1.5"	6.9"	0.0"	- 44.9"	- 88.4"	- 469.2"
TRAJ: 500 yd. zero	- 1.5"	24.9"	27.0"	0.0"	- 34.4"	- 379.2"
TRAJ: 600 yd. zero	- 1.5"	36.4"	44.2"	28.7"	0.0"	- 321.8"
TRAJ: 1000 yd. zero	- 1.5"	100.8"	140.8"	189.6"	193.1"	0.0"
VELOCITY (fps)	2500	2041	1836	1469	1311	974
ENERGY (ft. lbs.)	1208	805	651	417	332	183
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 11.4"	- 67.6"	- 118.9"	- 545.1"
TRAJ: 300 yd. zero	- 1.5"	7.6"	0.0"	- 48.5"	- 96.0"	- 506.9"
TRAJ: 500 yd. zero	- 1.5"	27.1"	29.1"	0.0"	- 37.7"	- 409.8"
TRAJ: 600 yd. zero	- 1.5"	39.6"	48.0"	31.5"	0.0"	- 346.9"
TRAJ: 1000 yd. zero	- 1.5"	109.0"	152.1"	204.9"	208.2"	0.0"

**6 MM (.243" Dia.) 100 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .357

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2561	2315	1875	1680	1111
ENERGY (ft. lbs.)	2134	1457	1191	781	627	274
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.9"	- 42.2"	- 73.6"	- 351.9"
TRAJ: 300 yd. zero	- 1.5"	4.7"	0.0"	- 30.6"	- 59.6"	- 328.6"
TRAJ: 500 yd. zero	- 1.5"	16.9"	18.4"	0.0"	- 22.9"	- 267.4"
TRAJ: 600 yd. zero	- 1.5"	24.6"	29.8"	19.1"	0.0"	- 229.1"
TRAJ: 1000 yd. zero	- 1.5"	70.4"	98.6"	133.7"	137.5"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2472	2232	1803	1615	1083
ENERGY (ft. lbs.)	1999	1357	1107	722	580	261
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.3"	- 44.8"	- 78.9"	- 377.0"
TRAJ: 300 yd. zero	- 1.5"	4.9"	0.0"	- 32.5"	- 64.2"	- 352.4"
TRAJ: 500 yd. zero	- 1.5"	17.9"	19.5"	0.0"	- 25.1"	- 287.3"
TRAJ: 600 yd. zero	- 1.5"	26.3"	32.1"	21.0"	0.0"	- 245.3"
TRAJ: 1000 yd. zero	- 1.5"	75.4"	105.7"	143.7"	147.2"	0.0"
VELOCITY (fps)	2900	2383	2150	1733	1552	1058
ENERGY (ft. lbs.)	1868	1261	1026	667	535	249
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.0"	- 48.8"	- 86.4"	- 408.1"
TRAJ: 300 yd. zero	- 1.5"	5.4"	0.0"	- 35.4"	- 70.3"	- 381.3"
TRAJ: 500 yd. zero	- 1.5"	19.6"	21.3"	0.0"	- 27.7"	- 310.3"
TRAJ: 600 yd. zero	- 1.5"	28.8"	35.2"	23.1"	0.0"	- 264.0"
TRAJ: 1000 yd. zero	- 1.5"	81.8"	114.4"	155.2"	158.5"	0.0"
VELOCITY (fps)	2800	2295	2068	1664	1481	1031
ENERGY (ft. lbs.)	1741	1170	950	615	487	236
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.7"	- 52.8"	- 92.7"	- 438.7"
TRAJ: 300 yd. zero	- 1.5"	5.9"	0.0"	- 38.1"	- 75.2"	- 409.3"
TRAJ: 500 yd. zero	- 1.5"	21.1"	22.9"	0.0"	- 29.4"	- 333.1"
TRAJ: 600 yd. zero	- 1.5"	30.9"	37.6"	24.5"	0.0"	- 284.0"
TRAJ: 1000 yd. zero	- 1.5"	87.7"	122.8"	166.6"	170.4"	0.0"
VELOCITY (fps)	2700	2208	1987	1596	1421	1010
ENERGY (ft. lbs.)	1619	1082	877	566	448	226
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.6"	- 58.1"	- 101.7"	- 473.1"
TRAJ: 300 yd. zero	- 1.5"	6.4"	0.0"	- 42.0"	- 82.4"	- 441.0"
TRAJ: 500 yd. zero	- 1.5"	23.3"	25.2"	0.0"	- 31.9"	- 356.9"
TRAJ: 600 yd. zero	- 1.5"	33.9"	41.2"	26.6"	0.0"	- 303.6"
TRAJ: 1000 yd. zero	- 1.5"	94.6"	132.3"	178.5"	182.2"	0.0"
VELOCITY (fps)	2600	2121	1906	1530	1362	989
ENERGY (ft. lbs.)	1501	999	807	520	412	217
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.2"	- 62.7"	- 109.8"	- 509.7"
TRAJ: 300 yd. zero	- 1.5"	6.8"	0.0"	- 45.6"	- 89.4"	- 475.6"
TRAJ: 500 yd. zero	- 1.5"	25.1"	27.4"	0.0"	- 34.6"	- 384.3"
TRAJ: 600 yd. zero	- 1.5"	36.6"	44.7"	28.9"	0.0"	- 326.5"
TRAJ: 1000 yd. zero	- 1.5"	102.0"	142.7"	192.2"	196.0"	0.0"

### 6 MM (.243" Dia.) 100 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .400

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2615	2390	1982	1797	1215
ENERGY (ft. lbs.)	2134	1519	1269	872	717	328
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.4"	- 38.9"	- 67.5"	- 309.9"
TRAJ: 300 yd. zero	- 1.5"	4.3"	0.0"	- 28.1"	- 54.5"	- 288.3"
TRAJ: 500 yd. zero	- 1.5"	15.6"	16.9"	0.0"	- 20.8"	- 232.1"
TRAJ: 600 yd. zero	- 1.5"	22.5"	27.3"	17.3"	0.0"	- 197.4"
TRAJ: 1000 yd. zero	- 1.5"	62.0"	86.5"	116.1"	118.5"	0.0"
VELOCITY (fps)	3000	2523	2304	1907	1728	1177
ENERGY (ft. lbs.)	1999	1414	1179	808	663	308
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.9"	- 41.8"	- 72.6"	- 334.6"
TRAJ: 300 yd. zero	- 1.5"	4.7"	0.0"	- 30.2"	- 58.6"	- 311.3"
TRAJ: 500 yd. zero	- 1.5"	16.8"	18.1"	0.0"	- 22.3"	- 250.8"
TRAJ: 600 yd. zero	- 1.5"	24.2"	29.3"	18.7"	0.0"	- 213.5"
TRAJ: 1000 yd. zero	- 1.5"	66.9"	93.4"	125.4"	128.1"	0.0"
VELOCITY (fps)	2900	2434	2220	1833	1660	1143
ENERGY (ft. lbs.)	1868	1316	1095	746	612	290
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.5"	- 45.3"	- 78.6"	- 360.9"
TRAJ: 300 yd. zero	- 1.5"	5.1"	0.0"	- 32.6"	- 63.4"	- 335.6"
TRAJ: 500 yd. zero	- 1.5"	18.1"	19.6"	0.0"	- 24.2"	- 270.2"
TRAJ: 600 yd. zero	- 1.5"	26.2"	31.7"	20.2"	0.0"	- 229.8"
TRAJ: 1000 yd. zero	- 1.5"	72.2"	100.7"	135.1"	137.9"	0.0"

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2800	2344	2136	1759	1593	1111
ENERGY (ft. lbs.)	1741	1220	1013	687	564	274
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.2"	-48.8"	-84.8"	-389.8"
TRAJ: 300 yd. zero	-1.5"	5.5"	0.0"	-35.1"	-68.4"	-362.5"
TRAJ: 500 yd. zero	-1.5"	19.6"	21.1"	0.0"	-26.2"	-292.1"
TRAJ: 600 yd. zero	-1.5"	28.3"	34.2"	21.8"	0.0"	-248.4"
TRAJ: 1000 yd. zero	-1.5"	78.0"	108.8"	146.1"	149.1"	0.0"
VELOCITY (fps)	2700	2256	2053	1688	1528	1082
ENERGY (ft. lbs.)	1619	1130	936	633	519	260
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.9"	-53.1"	-92.4"	-421.4"
TRAJ: 300 yd. zero	-1.5"	6.0"	0.0"	-38.2"	-74.4"	-391.5"
TRAJ: 500 yd. zero	-1.5"	21.3"	23.0"	0.0"	-28.5"	-315.0"
TRAJ: 600 yd. zero	-1.5"	30.8"	37.2"	23.8"	0.0"	-267.4"
TRAJ: 1000 yd. zero	-1.5"	84.3"	117.5"	157.5"	160.5"	0.0"
VELOCITY (fps)	2600	2167	1970	1618	1465	1056
ENERGY (ft. lbs.)	1501	1043	862	581	477	248
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.7"	-57.8"	-100.3"	-454.1"
TRAJ: 300 yd. zero	-1.5"	6.5"	0.0"	-41.6"	-80.8"	-421.6"
TRAJ: 500 yd. zero	-1.5"	23.1"	25.0"	0.0"	-30.9"	-338.4"
TRAJ: 600 yd. zero	-1.5"	33.4"	40.4"	25.8"	0.0"	-286.9"
TRAJ: 1000 yd. zero	-1.5"	90.8"	126.5"	169.2"	172.2"	0.0"

**25 Caliber (.257" Dia.) 100 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .216 BALLISTIC COEFFICIENT: .336

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3300	2708	2437	1954	1739	1116
ENERGY (ft. lbs.)	2419	1629	1319	848	672	277
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.1"	-37.4"	-65.9"	-324.0"
TRAJ: 300 yd. zero	-1.5"	4.1"	0.0"	-27.1"	-53.6"	-303.6"
TRAJ: 500 yd. zero	-1.5"	15.0"	16.3"	0.0"	-21.0"	-249.2"
TRAJ: 600 yd. zero	-1.5"	22.0"	26.8"	17.5"	0.0"	-214.1"
TRAJ: 1000 yd. zero	-1.5"	64.8"	91.1"	124.6"	128.5"	0.0"
VELOCITY (fps)	3200	2619	2354	1882	1675	1089
ENERGY (ft. lbs.)	2274	1523	1231	787	623	264
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.4"	-40.1"	-71.1"	-348.0"
TRAJ: 300 yd. zero	-1.5"	4.3"	0.0"	-29.4"	-58.2"	-326.4"
TRAJ: 500 yd. zero	-1.5"	16.1"	17.6"	0.0"	-22.9"	-267.6"
TRAJ: 600 yd. zero	-1.5"	23.7"	29.1"	19.1"	0.0"	-229.4"
TRAJ: 1000 yd. zero	-1.5"	69.6"	97.9"	133.8"	137.7"	0.0"
VELOCITY (fps)	3100	2529	2271	1812	1612	1064
ENERGY (ft. lbs.)	2134	1421	1146	729	577	252
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.0"	-43.0"	-75.9"	-371.2"
TRAJ: 300 yd. zero	-1.5"	4.7"	0.0"	-31.3"	-61.8"	-347.8"
TRAJ: 500 yd. zero	-1.5"	17.2"	18.8"	0.0"	-24.2"	-285.1"
TRAJ: 600 yd. zero	-1.5"	25.3"	30.9"	20.2"	0.0"	-244.7"
TRAJ: 1000 yd. zero	-1.5"	74.3"	104.3"	142.6"	146.9"	0.0"
VELOCITY (fps)	3000	2441	2189	1742	1550	1041
ENERGY (ft. lbs.)	1999	1323	1065	674	534	241
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.6"	-46.9"	-82.9"	-402.1"
TRAJ: 300 yd. zero	-1.5"	5.1"	0.0"	-34.1"	-67.6"	-376.5"
TRAJ: 500 yd. zero	-1.5"	18.8"	20.5"	0.0"	-26.6"	-308.3"
TRAJ: 600 yd. zero	-1.5"	27.7"	33.8"	22.2"	0.0"	-263.8"
TRAJ: 1000 yd. zero	-1.5"	80.4"	113.0"	154.2"	158.3"	0.0"
VELOCITY (fps)	2900	2353	2108	1674	1480	1016
ENERGY (ft. lbs.)	1868	1230	987	623	486	229
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.4"	-50.6"	-89.1"	-430.7"
TRAJ: 300 yd. zero	-1.5"	5.6"	0.0"	-36.6"	-72.3"	-402.7"
TRAJ: 500 yd. zero	-1.5"	20.3"	22.0"	0.0"	-28.3"	-329.4"
TRAJ: 600 yd. zero	-1.5"	29.7"	36.2"	23.6"	0.0"	-282.1"
TRAJ: 1000 yd. zero	-1.5"	86.2"	120.8"	164.7"	169.3"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2800	2266	2027	1608	1421	996
ENERGY (ft. lbs.)	1741	1140	913	574	448	220
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.9"	-54.3"	-95.9"	-461.3"
TRAJ: 300 yd. zero	-1.5"	5.9"	0.0"	-39.5"	-78.1"	-431.5"
TRAJ: 500 yd. zero	-1.5"	21.8"	23.7"	0.0"	-30.7"	-352.5"
TRAJ: 600 yd. zero	-1.5"	32.0"	39.1"	25.6"	0.0"	-301.3"
TRAJ: 1000 yd. zero	-1.5"	92.3"	129.5"	176.3"	180.8"	0.0"
VELOCITY (fps)	2700	2179	1947	1543	1363	977
ENERGY (ft. lbs.)	1619	1055	842	528	413	212
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.8"	-59.2"	-104.5"	-495.3"
TRAJ: 300 yd. zero	-1.5"	6.5"	0.0"	-42.9"	-84.9"	-462.6"
TRAJ: 500 yd. zero	-1.5"	23.7"	25.8"	0.0"	-33.3"	-376.8"
TRAJ: 600 yd. zero	-1.5"	34.8"	42.5"	27.8"	0.0"	-321.1"
TRAJ: 1000 yd. zero	-1.5"	99.1"	138.8"	188.4"	192.7"	0.0"
VELOCITY (fps)	2600	2093	1868	1469	1300	956
ENERGY (ft. lbs.)	1501	973	775	479	375	203
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.8"	-64.8"	-114.6"	-537.8"
TRAJ: 300 yd. zero	-1.5"	7.2"	0.0"	-46.8"	-93.0"	-501.8"
TRAJ: 500 yd. zero	-1.5"	26.0"	28.1"	0.0"	-36.7"	-408.0"
TRAJ: 600 yd. zero	-1.5"	38.2"	46.5"	30.7"	0.0"	-346.7"
TRAJ: 1000 yd. zero	-1.5"	107.6"	150.6"	204.0"	208.1"	0.0"

**25 Caliber (.257" Dia.) 120 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .260 BALLISTIC COEFFICIENT: .388

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2512	2288	1884	1703	1154
ENERGY (ft. lbs.)	2399	1681	1395	946	773	355
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.1"	-42.9"	-75.4"	-350.2"
TRAJ: 300 yd. zero	-1.5"	4.8"	0.0"	-31.0"	-61.0"	-326.2"
TRAJ: 500 yd. zero	-1.5"	17.2"	18.6"	0.0"	-23.8"	-264.2"
TRAJ: 600 yd. zero	-1.5"	25.2"	30.5"	19.9"	0.0"	-224.4"
TRAJ: 1000 yd. zero	-1.5"	70.1"	97.9"	132.1"	134.7"	0.0"
VELOCITY (fps)	2900	2422	2204	1811	1636	1117
ENERGY (ft. lbs.)	2241	1563	1295	874	714	333
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.8"	-46.6"	-81.1"	-376.4"
TRAJ: 300 yd. zero	-1.5"	5.2"	0.0"	-33.5"	-65.4"	-350.3"
TRAJ: 500 yd. zero	-1.5"	18.7"	20.2"	0.0"	-25.1"	-283.1"
TRAJ: 600 yd. zero	-1.5"	27.0"	32.7"	20.9"	0.0"	-241.2"
TRAJ: 1000 yd. zero	-1.5"	75.3"	105.1"	141.6"	144.7"	0.0"
VELOCITY (fps)	2800	2333	2121	1739	1571	1088
ENERGY (ft. lbs.)	2090	1450	1199	806	658	316
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.5"	-50.8"	-88.8"	-407.7"
TRAJ: 300 yd. zero	-1.5"	5.7"	0.0"	-36.5"	-71.5"	-379.2"
TRAJ: 500 yd. zero	-1.5"	20.3"	21.9"	0.0"	-27.6"	-306.0"
TRAJ: 600 yd. zero	-1.5"	29.6"	35.8"	23.1"	0.0"	-259.9"
TRAJ: 1000 yd. zero	-1.5"	81.5"	113.8"	153.0"	156.0"	0.0"
VELOCITY (fps)	2700	2244	2038	1668	1498	1058
ENERGY (ft. lbs.)	1943	1343	1107	742	598	298
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.3"	-55.6"	-96.7"	-441.8"
TRAJ: 300 yd. zero	-1.5"	6.2"	0.0"	-40.0"	-78.0"	-410.6"
TRAJ: 500 yd. zero	-1.5"	22.3"	24.1"	0.0"	-29.9"	-330.4"
TRAJ: 600 yd. zero	-1.5"	32.2"	39.0"	24.9"	0.0"	-280.5"
TRAJ: 1000 yd. zero	-1.5"	88.4"	123.2"	165.2"	168.4"	0.0"
VELOCITY (fps)	2600	2157	1956	1599	1436	1033
ENERGY (ft. lbs.)	1802	1239	1020	681	549	285
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.2"	-60.3"	-104.7"	-476.2"
TRAJ: 300 yd. zero	-1.5"	6.8"	0.0"	-43.2"	-84.2"	-442.1"
TRAJ: 500 yd. zero	-1.5"	24.1"	25.9"	0.0"	-32.3"	-355.6"
TRAJ: 600 yd. zero	-1.5"	34.9"	42.1"	27.0"	0.0"	-301.6"
TRAJ: 1000 yd. zero	-1.5"	95.3"	132.6"	177.8"	181.0"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2500	2069	1874	1531	1374	1010
ENERGY (ft. lbs.)	1866	1141	936	625	503	272
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.8"	-64.9"	-113.0"	-513.7"
TRAJ: 300 yd. zero	-1.5"	7.2"	0.0"	-48.8"	-91.3"	-477.5"
TRAJ: 500 yd. zero	-1.5"	26.0"	28.1"	0.0"	-35.0"	-383.7"
TRAJ: 600 yd. zero	-1.5"	37.7"	45.7"	29.2"	0.0"	-325.3"
TRAJ: 1000 yd. zero	-1.5"	102.7"	143.3"	191.9"	195.2"	0.0"
VELOCITY (fps)	2400	1981	1793	1455	1307	986
ENERGY (ft. lbs.)	1535	1046	857	564	455	259
TRAJ: 200 yd. zero	-1.5"	0.0"	-11.9"	-71.2"	-123.9"	-557.3"
TRAJ: 300 yd. zero	-1.5"	8.0"	0.0"	-51.3"	-99.9"	-517.4"
TRAJ: 500 yd. zero	-1.5"	28.5"	30.8"	0.0"	-38.3"	-414.7"
TRAJ: 600 yd. zero	-1.5"	41.3"	50.0"	32.0"	0.0"	-350.8"
TRAJ: 1000 yd. zero	-1.5"	111.5"	155.2"	207.4"	210.5"	0.0"

**6.5 MM (.264" Dia.) 129 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .264 BALLISTIC COEFFICIENT: .415

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2542	2331	1946	1771	1215
ENERGY (ft. lbs.)	2579	1851	1556	1085	899	423
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.1"	-41.7"	-72.2"	-329.4"
TRAJ: 300 yd. zero	-1.5"	4.8"	0.0"	-29.8"	-57.9"	-305.5"
TRAJ: 500 yd. zero	-1.5"	16.7"	17.9"	0.0"	-22.0"	-245.8"
TRAJ: 600 yd. zero	-1.5"	24.1"	29.0"	18.4"	0.0"	-208.9"
TRAJ: 1000 yd. zero	-1.5"	65.9"	91.7"	122.9"	125.4"	0.0"
VELOCITY (fps)	2900	2451	2246	1871	1702	1177
ENERGY (ft. lbs.)	2410	1722	1445	1003	830	397
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.7"	-45.2"	-78.2"	-356.4"
TRAJ: 300 yd. zero	-1.5"	5.2"	0.0"	-32.2"	-62.7"	-330.5"
TRAJ: 500 yd. zero	-1.5"	18.1"	19.4"	0.0"	-24.0"	-266.0"
TRAJ: 600 yd. zero	-1.5"	26.1"	31.4"	20.0"	0.0"	-225.9"
TRAJ: 1000 yd. zero	-1.5"	71.3"	99.2"	133.0"	135.6"	0.0"
VELOCITY (fps)	2800	2361	2161	1797	1635	1142
ENERGY (ft. lbs.)	2246	1598	1338	925	765	374
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.4"	-49.0"	-85.2"	-386.5"
TRAJ: 300 yd. zero	-1.5"	5.8"	0.0"	-34.9"	-68.2"	-358.3"
TRAJ: 500 yd. zero	-1.5"	19.6"	21.0"	0.0"	-26.3"	-288.4"
TRAJ: 600 yd. zero	-1.5"	28.4"	34.1"	22.0"	0.0"	-244.5"
TRAJ: 1000 yd. zero	-1.5"	77.3"	107.5"	144.2"	146.7"	0.0"
VELOCITY (fps)	2700	2272	2077	1724	1568	1105
ENERGY (ft. lbs.)	2089	1479	1236	851	705	350
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.8"	-52.8"	-92.4"	-415.9"
TRAJ: 300 yd. zero	-1.5"	5.9"	0.0"	-38.0"	-74.6"	-386.3"
TRAJ: 500 yd. zero	-1.5"	21.1"	22.8"	0.0"	-29.0"	-310.2"
TRAJ: 600 yd. zero	-1.5"	30.8"	37.3"	24.2"	0.0"	-261.8"
TRAJ: 1000 yd. zero	-1.5"	83.2"	115.9"	155.1"	157.1"	0.0"
VELOCITY (fps)	2600	2184	1994	1653	1493	1072
ENERGY (ft. lbs.)	1937	1366	1139	782	639	329
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.7"	-57.9"	-100.1"	-450.1"
TRAJ: 300 yd. zero	-1.5"	6.5"	0.0"	-41.7"	-80.6"	-417.7"
TRAJ: 500 yd. zero	-1.5"	23.2"	25.0"	0.0"	-30.5"	-334.2"
TRAJ: 600 yd. zero	-1.5"	33.4"	40.3"	25.5"	0.0"	-283.2"
TRAJ: 1000 yd. zero	-1.5"	90.0"	125.3"	167.1"	170.0"	0.0"
VELOCITY (fps)	2500	2095	1911	1582	1430	1046
ENERGY (ft. lbs.)	1791	1258	1047	717	586	313
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.6"	-62.7"	-108.3"	-487.5"
TRAJ: 300 yd. zero	-1.5"	7.1"	0.0"	-45.0"	-87.0"	-452.0"
TRAJ: 500 yd. zero	-1.5"	25.1"	27.0"	0.0"	-33.0"	-362.0"
TRAJ: 600 yd. zero	-1.5"	36.1"	43.5"	27.5"	0.0"	-306.9"
TRAJ: 1000 yd. zero	-1.5"	97.5"	135.6"	181.0"	184.2"	0.0"

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2400	2007	1829	1503	1358	1018
ENERGY (ft. lbs.)	1850	1154	958	648	529	297
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 11.7"	- 69.1"	- 120.4"	- 532.8"
TRAJ: 300 yd. zero	- 1.5"	7.8"	0.0"	- 49.5"	- 96.9"	- 493.7"
TRAJ: 500 yd. zero	- 1.5"	27.6"	29.7"	0.0"	- 37.4"	- 394.6"
TRAJ: 600 yd. zero	- 1.5"	40.1"	48.5"	31.2"	0.0"	- 332.1"
TRAJ: 1000 yd. zero	- 1.5"	106.6"	148.1"	197.3"	199.3"	0.0"
VELOCITY (fps)	2300	1919	1746	1436	1299	995
ENERGY (ft. lbs.)	1518	1055	874	591	484	283
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 13.0"	- 76.0"	- 131.5"	- 576.4"
TRAJ: 300 yd. zero	- 1.5"	8.7"	0.0"	- 54.2"	- 105.5"	- 533.0"
TRAJ: 500 yd. zero	- 1.5"	30.4"	32.6"	0.0"	- 40.3"	- 424.4"
TRAJ: 600 yd. zero	- 1.5"	43.9"	52.8"	33.7"	0.0"	- 357.1"
TRAJ: 1000 yd. zero	- 1.5"	115.3"	159.9"	212.2"	214.3"	0.0"

### 6.5 MM (.264" Dia.) 140 GRAIN SPIRE POINT

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .441

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2568	2367	1999	1832	1278
ENERGY (ft. lbs.)	2799	2050	1742	1243	1043	508
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.0"	- 41.0"	- 70.7"	- 314.0"
TRAJ: 300 yd. zero	- 1.5"	4.7"	0.0"	- 29.2"	- 56.6"	- 290.4"
TRAJ: 500 yd. zero	- 1.5"	18.4"	17.6"	0.0"	- 21.4"	- 231.9"
TRAJ: 600 yd. zero	- 1.5"	23.6"	28.3"	17.9"	0.0"	- 196.1"
TRAJ: 1000 yd. zero	- 1.5"	62.8"	87.1"	116.0"	117.7"	0.0"
VELOCITY (fps)	2900	2476	2281	1923	1760	1232
ENERGY (ft. lbs.)	2615	1907	1618	1150	963	472
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.6"	- 44.3"	- 76.3"	- 339.8"
TRAJ: 300 yd. zero	- 1.5"	5.1"	0.0"	- 31.5"	- 61.0"	- 314.3"
TRAJ: 500 yd. zero	- 1.5"	17.7"	18.9"	0.0"	- 23.1"	- 251.2"
TRAJ: 600 yd. zero	- 1.5"	25.4"	30.5"	19.3"	0.0"	- 212.6"
TRAJ: 1000 yd. zero	- 1.5"	68.0"	94.3"	125.6"	127.6"	0.0"
VELOCITY (fps)	2800	2386	2196	1847	1690	1191
ENERGY (ft. lbs.)	2438	1770	1499	1061	888	441
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.3"	- 47.9"	- 82.7"	- 366.3"
TRAJ: 300 yd. zero	- 1.5"	5.5"	0.0"	- 34.0"	- 66.1"	- 338.5"
TRAJ: 500 yd. zero	- 1.5"	19.2"	20.4"	0.0"	- 25.2"	- 270.4"
TRAJ: 600 yd. zero	- 1.5"	27.6"	33.1"	21.0"	0.0"	- 228.3"
TRAJ: 1000 yd. zero	- 1.5"	73.3"	101.8"	135.2"	137.0"	0.0"
VELOCITY (fps)	2700	2296	2111	1773	1622	1154
ENERGY (ft. lbs.)	2267	1639	1385	977	818	414
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.0"	- 52.0"	- 90.1"	- 399.1"
TRAJ: 300 yd. zero	- 1.5"	6.0"	0.0"	- 36.9"	- 72.0"	- 368.9"
TRAJ: 500 yd. zero	- 1.5"	20.8"	22.2"	0.0"	- 27.7"	- 295.0"
TRAJ: 600 yd. zero	- 1.5"	30.1"	36.0"	23.1"	0.0"	- 248.8"
TRAJ: 1000 yd. zero	- 1.5"	79.8"	110.7"	147.5"	149.3"	0.0"
VELOCITY (fps)	2600	2207	1699	1555	1362	1115
ENERGY (ft. lbs.)	2102	1514	1277	898	751	387
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.8"	- 56.7"	- 97.2"	- 429.0"
TRAJ: 300 yd. zero	- 1.5"	6.6"	0.0"	- 40.3"	- 77.4"	- 396.0"
TRAJ: 500 yd. zero	- 1.5"	22.7"	24.2"	0.0"	- 29.1"	- 315.4"
TRAJ: 600 yd. zero	- 1.5"	32.4"	38.7"	24.3"	0.0"	- 266.9"
TRAJ: 1000 yd. zero	- 1.5"	85.8"	118.8"	157.7"	160.2"	0.0"
VELOCITY (fps)	2500	2118	1943	1627	1479	1080
ENERGY (ft. lbs.)	1943	1394	1174	823	680	363
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.3"	- 61.6"	- 106.1"	- 467.1"
TRAJ: 300 yd. zero	- 1.5"	6.9"	0.0"	- 44.3"	- 85.3"	- 432.5"
TRAJ: 500 yd. zero	- 1.5"	24.6"	26.6"	0.0"	- 32.1"	- 343.8"
TRAJ: 600 yd. zero	- 1.5"	35.4"	42.7"	26.8"	0.0"	- 290.2"
TRAJ: 1000 yd. zero	- 1.5"	93.4"	129.8"	171.9"	174.2"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2400	2029	1859	1556	1414	1052
ENERGY (ft. lbs.)	1791	1280	1075	753	622	344
TRAJ: 200 yd. zero	-1.5"	0.0"	-11.3"	-66.9"	-115.0"	-506.5"
TRAJ: 300 yd. zero	-1.5"	7.8"	0.0"	-47.9"	-92.2"	-468.5"
TRAJ: 500 yd. zero	-1.5"	26.8"	28.8"	0.0"	-34.7"	-372.6"
TRAJ: 600 yd. zero	-1.5"	38.4"	46.1"	29.0"	0.0"	-314.7"
TRAJ: 1000 yd. zero	-1.5"	101.3"	140.6"	186.3"	188.8"	0.0"
VELOCITY (fps)	2300	1940	1776	1476	1342	1023
ENERGY (ft. lbs.)	1645	1170	981	678	560	325
TRAJ: 200 yd. zero	-1.5"	0.0"	-12.5"	-73.1"	-126.2"	-552.9"
TRAJ: 300 yd. zero	-1.5"	8.4"	0.0"	-52.2"	-101.0"	-511.0"
TRAJ: 500 yd. zero	-1.5"	29.3"	31.3"	0.0"	-38.4"	-406.5"
TRAJ: 600 yd. zero	-1.5"	42.1"	50.5"	32.0"	0.0"	-342.5"
TRAJ: 1000 yd. zero	-1.5"	110.6"	153.3"	203.3"	205.5"	0.0"

**270 Caliber (.277" Dia.) 130 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .374

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3400	2856	2604	2144	1937	1270
ENERGY (ft. lbs.)	3338	2355	1957	1328	1084	465
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.4"	-32.7"	-57.5"	-272.1"
TRAJ: 300 yd. zero	-1.5"	3.6"	0.0"	-23.7"	-46.6"	-254.0"
TRAJ: 500 yd. zero	-1.5"	13.1"	14.2"	0.0"	-18.1"	-206.5"
TRAJ: 600 yd. zero	-1.5"	19.2"	23.3"	15.2"	0.0"	-176.2"
TRAJ: 1000 yd. zero	-1.5"	54.4"	76.2"	103.3"	105.7"	0.0"
VELOCITY (fps)	3300	2765	2518	2069	1868	1228
ENERGY (ft. lbs.)	3144	2208	1830	1236	1007	435
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.8"	-35.2"	-61.8"	-290.7"
TRAJ: 300 yd. zero	-1.5"	3.9"	0.0"	-25.5"	-50.1"	-271.2"
TRAJ: 500 yd. zero	-1.5"	14.1"	15.3"	0.0"	-19.5"	-220.2"
TRAJ: 600 yd. zero	-1.5"	20.6"	25.1"	16.3"	0.0"	-187.6"
TRAJ: 1000 yd. zero	-1.5"	58.1"	81.4"	110.1"	112.6"	0.0"
VELOCITY (fps)	3200	2675	2433	1995	1799	1189
ENERGY (ft. lbs.)	2957	2066	1709	1149	934	408
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.3"	-38.0"	-66.7"	-313.3"
TRAJ: 300 yd. zero	-1.5"	4.2"	0.0"	-27.5"	-54.0"	-292.3"
TRAJ: 500 yd. zero	-1.5"	15.2"	16.5"	0.0"	-21.0"	-237.2"
TRAJ: 600 yd. zero	-1.5"	22.2"	27.0"	17.5"	0.0"	-202.1"
TRAJ: 1000 yd. zero	-1.5"	62.7"	87.7"	118.6"	121.3"	0.0"
VELOCITY (fps)	3100	2584	2348	1922	1731	1155
ENERGY (ft. lbs.)	2775	1928	1592	1066	865	385
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.8"	-41.1"	-72.1"	-338.4"
TRAJ: 300 yd. zero	-1.5"	4.6"	0.0"	-29.7"	-58.5"	-315.6"
TRAJ: 500 yd. zero	-1.5"	16.5"	17.8"	0.0"	-22.8"	-256.2"
TRAJ: 600 yd. zero	-1.5"	24.1"	29.3"	19.0"	0.0"	-218.1"
TRAJ: 1000 yd. zero	-1.5"	67.7"	94.7"	128.1"	130.9"	0.0"
VELOCITY (fps)	3000	2494	2264	1849	1665	1119
ENERGY (ft. lbs.)	2599	1796	1480	987	800	361
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.4"	-44.6"	-77.5"	-362.2"
TRAJ: 300 yd. zero	-1.5"	5.0"	0.0"	-32.1"	-62.6"	-337.4"
TRAJ: 500 yd. zero	-1.5"	17.8"	19.3"	0.0"	-23.9"	-273.0"
TRAJ: 600 yd. zero	-1.5"	25.8"	31.3"	20.0"	0.0"	-233.0"
TRAJ: 1000 yd. zero	-1.5"	72.4"	101.2"	136.5"	139.8"	0.0"
VELOCITY (fps)	2900	2405	2181	1777	1600	1090
ENERGY (ft. lbs.)	2428	1670	1373	911	739	343
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.8"	-47.2"	-83.0"	-389.0"
TRAJ: 300 yd. zero	-1.5"	5.2"	0.0"	-34.2"	-67.4"	-362.9"
TRAJ: 500 yd. zero	-1.5"	18.9"	20.5"	0.0"	-26.3"	-294.4"
TRAJ: 600 yd. zero	-1.5"	27.7"	33.7"	21.9"	0.0"	-250.5"
TRAJ: 1000 yd. zero	-1.5"	77.8"	108.9"	147.2"	150.3"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2800	2316	2098	1706	1536	1064
ENERGY (ft. lbs.)	2264	1549	1271	840	681	327
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.5"	- 51.6"	- 89.8"	- 418.7"
TRAJ: 300 yd. zero	- 1.5"	5.7"	0.0"	- 37.3"	- 72.7"	- 390.2"
TRAJ: 500 yd. zero	- 1.5"	20.7"	22.4"	0.0"	- 27.8"	- 315.4"
TRAJ: 600 yd. zero	- 1.5"	29.9"	36.4"	23.2"	0.0"	- 269.0"
TRAJ: 1000 yd. zero	- 1.5"	83.7"	117.1"	157.7"	161.4"	0.0"

**270 Caliber (.277" Dia.) 140 GRAIN BOAT TAIL SPIRE POINT**

SECTIONAL DENSITY: .261 BALLISTIC COEFFICIENT: .496

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2612	2430	2093	1937	1409
ENERGY (ft. lbs.)	2799	2121	1836	1362	1187	617
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.5"	- 38.1"	- 65.2"	- 281.6"
TRAJ: 300 yd. zero	- 1.5"	4.4"	0.0"	- 27.2"	- 52.1"	- 259.8"
TRAJ: 500 yd. zero	- 1.5"	15.3"	16.4"	0.0"	- 19.4"	- 205.2"
TRAJ: 600 yd. zero	- 1.5"	21.8"	26.1"	16.2"	0.0"	- 172.8"
TRAJ: 1000 yd. zero	- 1.5"	56.3"	78.0"	102.6"	103.7"	0.0"
VELOCITY (fps)	2900	2520	2342	2013	1862	1349
ENERGY (ft. lbs.)	2615	1975	1706	1260	1078	566
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.1"	- 41.3"	- 70.4"	- 302.2"
TRAJ: 300 yd. zero	- 1.5"	4.7"	0.0"	- 29.5"	- 56.2"	- 278.6"
TRAJ: 500 yd. zero	- 1.5"	16.5"	17.7"	0.0"	- 20.8"	- 219.5"
TRAJ: 600 yd. zero	- 1.5"	23.5"	28.1"	17.4"	0.0"	- 184.8"
TRAJ: 1000 yd. zero	- 1.5"	60.5"	83.6"	109.8"	110.9"	0.0"
VELOCITY (fps)	2800	2428	2255	1935	1787	1297
ENERGY (ft. lbs.)	2438	1833	1581	1164	993	523
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.6"	- 44.6"	- 76.3"	- 327.4"
TRAJ: 300 yd. zero	- 1.5"	5.1"	0.0"	- 31.8"	- 61.0"	- 301.8"
TRAJ: 500 yd. zero	- 1.5"	17.9"	19.1"	0.0"	- 22.7"	- 238.0"
TRAJ: 600 yd. zero	- 1.5"	25.5"	30.5"	19.0"	0.0"	- 200.1"
TRAJ: 1000 yd. zero	- 1.5"	65.5"	90.6"	119.0"	120.1"	0.0"
VELOCITY (fps)	2700	2337	2168	1858	1715	1250
ENERGY (ft. lbs.)	2267	1698	1462	1073	915	486
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.3"	- 48.3"	- 82.6"	- 355.1"
TRAJ: 300 yd. zero	- 1.5"	5.6"	0.0"	- 34.3"	- 65.8"	- 327.2"
TRAJ: 500 yd. zero	- 1.5"	19.3"	20.6"	0.0"	- 24.6"	- 258.5"
TRAJ: 600 yd. zero	- 1.5"	27.5"	32.9"	20.5"	0.0"	- 217.4"
TRAJ: 1000 yd. zero	- 1.5"	71.0"	98.2"	129.3"	130.5"	0.0"
VELOCITY (fps)	2600	2247	2083	1780	1643	1204
ENERGY (ft. lbs.)	2102	1570	1349	985	839	451
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.0"	- 52.5"	- 89.7"	- 385.7"
TRAJ: 300 yd. zero	- 1.5"	6.1"	0.0"	- 37.3"	- 71.5"	- 355.4"
TRAJ: 500 yd. zero	- 1.5"	21.0"	22.4"	0.0"	- 26.7"	- 280.6"
TRAJ: 600 yd. zero	- 1.5"	29.9"	35.8"	22.3"	0.0"	- 236.1"
TRAJ: 1000 yd. zero	- 1.5"	77.1"	106.6"	140.3"	141.7"	0.0"
VELOCITY (fps)	2500	2156	1997	1705	1573	1163
ENERGY (ft. lbs.)	1943	1445	1240	904	769	421
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.9"	- 57.1"	- 97.8"	- 419.9"
TRAJ: 300 yd. zero	- 1.5"	6.6"	0.0"	- 40.6"	- 78.0"	- 386.9"
TRAJ: 500 yd. zero	- 1.5"	22.9"	24.4"	0.0"	- 29.3"	- 305.6"
TRAJ: 600 yd. zero	- 1.5"	32.6"	39.0"	24.4"	0.0"	- 256.7"
TRAJ: 1000 yd. zero	- 1.5"	84.0"	116.1"	152.8"	154.1"	0.0"
VELOCITY (fps)	2400	2066	1912	1630	1504	1126
ENERGY (ft. lbs.)	1791	1327	1137	826	703	394
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.8"	- 62.6"	- 107.1"	- 457.9"
TRAJ: 300 yd. zero	- 1.5"	7.2"	0.0"	- 44.6"	- 85.5"	- 421.9"
TRAJ: 500 yd. zero	- 1.5"	25.1"	26.8"	0.0"	- 31.9"	- 332.6"
TRAJ: 600 yd. zero	- 1.5"	35.7"	42.8"	26.6"	0.0"	- 279.4"
TRAJ: 1000 yd. zero	- 1.5"	91.6"	126.6"	166.3"	167.6"	0.0"

**270 Caliber (.277" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .279 BALLISTIC COEFFICIENT: .443

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2569	2370	2003	1836	1283
ENERGY (ft. lbs.)	2998	2199	1871	1337	1123	548
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.8"	- 40.7"	- 70.4"	- 312.8"
TRAJ: 300 yd. zero	- 1.5"	4.6"	0.0"	- 29.3"	- 56.7"	- 290.0"
TRAJ: 500 yd. zero	- 1.5"	16.3"	17.6"	0.0"	- 21.5"	- 231.3"
TRAJ: 600 yd. zero	- 1.5"	23.5"	28.4"	17.9"	0.0"	- 195.4"
TRAJ: 1000 yd. zero	- 1.5"	62.6"	87.0"	115.7"	117.3"	0.0"
VELOCITY (fps)	2900	2478	2284	1927	1764	1237
ENERGY (ft. lbs.)	2802	2046	1737	1237	1037	510
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.3"	- 43.9"	- 75.9"	- 336.2"
TRAJ: 300 yd. zero	- 1.5"	4.9"	0.0"	- 31.6"	- 61.1"	- 311.5"
TRAJ: 500 yd. zero	- 1.5"	17.6"	19.0"	0.0"	- 23.1"	- 248.3"
TRAJ: 600 yd. zero	- 1.5"	25.3"	30.6"	19.3"	0.0"	- 209.6"
TRAJ: 1000 yd. zero	- 1.5"	67.3"	93.5"	124.2"	125.8"	0.0"
VELOCITY (fps)	2800	2388	2198	1851	1694	1195
ENERGY (ft. lbs.)	2612	1899	1610	1142	956	476
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.0"	- 47.5"	- 82.3"	- 364.3"
TRAJ: 300 yd. zero	- 1.5"	5.4"	0.0"	- 34.1"	- 66.2"	- 337.5"
TRAJ: 500 yd. zero	- 1.5"	19.0"	20.5"	0.0"	- 25.2"	- 269.2"
TRAJ: 600 yd. zero	- 1.5"	27.4"	33.1"	21.0"	0.0"	- 227.1"
TRAJ: 1000 yd. zero	- 1.5"	72.9"	101.3"	134.6"	136.3"	0.0"
VELOCITY (fps)	2700	2298	2113	1776	1626	1157
ENERGY (ft. lbs.)	2429	1759	1488	1051	880	446
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.7"	- 51.5"	- 89.6"	- 396.4"
TRAJ: 300 yd. zero	- 1.5"	5.8"	0.0"	- 37.0"	- 72.1"	- 367.3"
TRAJ: 500 yd. zero	- 1.5"	20.6"	22.2"	0.0"	- 27.7"	- 293.3"
TRAJ: 600 yd. zero	- 1.5"	29.9"	36.1"	23.1"	0.0"	- 247.0"
TRAJ: 1000 yd. zero	- 1.5"	79.3"	110.2"	146.7"	148.2"	0.0"
VELOCITY (fps)	2600	2208	2029	1703	1558	1118
ENERGY (ft. lbs.)	2252	1625	1372	966	809	416
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.5"	- 56.2"	- 96.6"	- 427.6"
TRAJ: 300 yd. zero	- 1.5"	6.4"	0.0"	- 40.4"	- 77.6"	- 395.9"
TRAJ: 500 yd. zero	- 1.5"	22.5"	24.2"	0.0"	- 29.1"	- 315.0"
TRAJ: 600 yd. zero	- 1.5"	32.2"	38.8"	24.3"	0.0"	- 266.5"
TRAJ: 1000 yd. zero	- 1.5"	85.5"	118.8"	157.5"	159.9"	0.0"
VELOCITY (fps)	2500	2119	1945	1630	1482	1083
ENERGY (ft. lbs.)	2082	1496	1261	886	732	391
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.4"	- 60.7"	- 105.0"	- 464.6"
TRAJ: 300 yd. zero	- 1.5"	6.9"	0.0"	- 43.3"	- 84.1"	- 429.8"
TRAJ: 500 yd. zero	- 1.5"	24.3"	26.0"	0.0"	- 32.1"	- 343.2"
TRAJ: 600 yd. zero	- 1.5"	35.0"	42.1"	26.8"	0.0"	- 289.6"
TRAJ: 1000 yd. zero	- 1.5"	92.9"	129.0"	171.6"	173.8"	0.0"

**7 MM (.284" Dia.) 154 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .273 BALLISTIC COEFFICIENT: .423

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3200	2733	2515	2116	1934	1327
ENERGY (ft. lbs.)	3502	2555	2163	1531	1279	602
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.0"	- 35.6"	- 61.9"	- 279.0"
TRAJ: 300 yd. zero	- 1.5"	4.0"	0.0"	- 25.6"	- 49.8"	- 258.9"
TRAJ: 500 yd. zero	- 1.5"	14.3"	15.4"	0.0"	- 19.1"	- 207.7"
TRAJ: 600 yd. zero	- 1.5"	20.6"	24.9"	16.0"	0.0"	- 175.8"
TRAJ: 1000 yd. zero	- 1.5"	55.8"	77.7"	103.9"	105.5"	0.0"
VELOCITY (fps)	3100	2641	2428	2039	1862	1279
ENERGY (ft. lbs.)	3287	2386	2017	1422	1186	560
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.4"	- 38.3"	- 66.5"	- 299.9"
TRAJ: 300 yd. zero	- 1.5"	4.3"	0.0"	- 27.5"	- 53.5"	- 278.3"
TRAJ: 500 yd. zero	- 1.5"	15.3"	16.5"	0.0"	- 20.5"	- 223.3"
TRAJ: 600 yd. zero	- 1.5"	22.2"	26.8"	17.2"	0.0"	- 189.0"
TRAJ: 1000 yd. zero	- 1.5"	60.0"	83.5"	111.7"	113.4"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2550	2342	1963	1791	1235
ENERGY (ft. lbs.)	3078	2224	1876	1318	1097	521
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.0"	-41.3"	-71.7"	-324.4"
TRAJ: 300 yd. zero	-1.5"	4.7"	0.0"	-29.6"	-57.7"	-301.0"
TRAJ: 500 yd. zero	-1.5"	16.5"	17.8"	0.0"	-22.1"	-241.7"
TRAJ: 600 yd. zero	-1.5"	23.9"	28.9"	18.5"	0.0"	-204.8"
TRAJ: 1000 yd. zero	-1.5"	64.9"	90.3"	120.9"	122.9"	0.0"
VELOCITY (fps)	2900	2459	2257	1888	1721	1193
ENERGY (ft. lbs.)	2877	2069	1742	1219	1013	487
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.6"	-44.7"	-77.7"	-349.5"
TRAJ: 300 yd. zero	-1.5"	5.1"	0.0"	-31.9"	-62.4"	-324.1"
TRAJ: 500 yd. zero	-1.5"	17.9"	19.2"	0.0"	-24.0"	-260.1"
TRAJ: 600 yd. zero	-1.5"	25.9"	31.2"	20.0"	0.0"	-220.0"
TRAJ: 1000 yd. zero	-1.5"	69.9"	97.2"	130.1"	132.0"	0.0"
VELOCITY (fps)	2800	2369	2172	1813	1652	1157
ENERGY (ft. lbs.)	2682	1920	1614	1124	934	458
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.3"	-48.4"	-84.5"	-380.4"
TRAJ: 300 yd. zero	-1.5"	5.5"	0.0"	-34.6"	-67.9"	-352.7"
TRAJ: 500 yd. zero	-1.5"	19.4"	20.8"	0.0"	-26.3"	-283.5"
TRAJ: 600 yd. zero	-1.5"	28.2"	34.0"	22.0"	0.0"	-239.6"
TRAJ: 1000 yd. zero	-1.5"	76.1"	105.8"	141.8"	143.8"	0.0"
VELOCITY (fps)	2700	2280	2088	1739	1585	1123
ENERGY (ft. lbs.)	2493	1778	1491	1035	859	432
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.0"	-52.7"	-91.0"	-408.6"
TRAJ: 300 yd. zero	-1.5"	6.0"	0.0"	-37.6"	-72.9"	-378.4"
TRAJ: 500 yd. zero	-1.5"	21.1"	22.6"	0.0"	-27.7"	-303.1"
TRAJ: 600 yd. zero	-1.5"	30.3"	36.5"	23.1"	0.0"	-256.9"
TRAJ: 1000 yd. zero	-1.5"	81.7"	113.5"	151.6"	154.2"	0.0"
VELOCITY (fps)	2600	2191	2005	1667	1510	1084
ENERGY (ft. lbs.)	2312	1642	1374	951	780	402
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.8"	-57.7"	-99.7"	-445.6"
TRAJ: 300 yd. zero	-1.5"	6.6"	0.0"	-41.2"	-80.0"	-412.7"
TRAJ: 500 yd. zero	-1.5"	23.1"	24.7"	0.0"	-30.5"	-330.2"
TRAJ: 600 yd. zero	-1.5"	33.3"	40.0"	25.5"	0.0"	-279.3"
TRAJ: 1000 yd. zero	-1.5"	89.1"	123.8"	165.1"	167.6"	0.0"
VELOCITY (fps)	2500	2102	1921	1597	1445	1056
ENERGY (ft. lbs.)	2138	1512	1263	872	715	382
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.8"	-62.4"	-108.0"	-482.3"
TRAJ: 300 yd. zero	-1.5"	7.2"	0.0"	-44.3"	-86.3"	-446.1"
TRAJ: 500 yd. zero	-1.5"	25.0"	26.6"	0.0"	-33.0"	-357.3"
TRAJ: 600 yd. zero	-1.5"	36.0"	43.2"	27.5"	0.0"	-302.3"
TRAJ: 1000 yd. zero	-1.5"	96.5"	133.9"	178.7"	181.4"	0.0"
VELOCITY (fps)	2400	2014	1838	1527	1382	1031
ENERGY (ft. lbs.)	1970	1387	1156	798	653	363
TRAJ: 200 yd. zero	-1.5"	0.0"	-11.9"	-69.3"	-118.9"	-524.8"
TRAJ: 300 yd. zero	-1.5"	8.0"	0.0"	-49.4"	-95.0"	-485.0"
TRAJ: 500 yd. zero	-1.5"	27.7"	29.7"	0.0"	-35.7"	-386.1"
TRAJ: 600 yd. zero	-1.5"	39.7"	47.5"	29.8"	0.0"	-326.5"
TRAJ: 1000 yd. zero	-1.5"	105.0"	145.5"	193.1"	195.9"	0.0"

### 7 MM (.284" Dia.) 162 GRAIN BOAT TAIL HOLLOW POINT

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .560

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2656	2493	2189	2047	1550
ENERGY (ft. lbs.)	3238	2539	2237	1725	1508	865
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.5"	-37.1"	-63.4"	-264.4"
TRAJ: 300 yd. zero	-1.5"	4.4"	0.0"	-26.2"	-50.4"	-242.6"
TRAJ: 500 yd. zero	-1.5"	14.9"	15.8"	0.0"	-18.8"	-190.1"
TRAJ: 600 yd. zero	-1.5"	21.2"	25.2"	15.7"	0.0"	-158.6"
TRAJ: 1000 yd. zero	-1.5"	52.9"	72.8"	95.1"	95.2"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2900	2563	2404	2108	1970	1480
ENERGY (ft. lbs.)	3026	2363	2080	1599	1396	788
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.0"	-40.4"	-68.6"	-284.1"
TRAJ: 300 yd. zero	-1.5"	4.7"	0.0"	-28.7"	-54.6"	-260.8"
TRAJ: 500 yd. zero	-1.5"	16.2"	17.2"	0.0"	-20.1"	-203.3"
TRAJ: 600 yd. zero	-1.5"	22.9"	27.3"	16.8"	0.0"	-169.7"
TRAJ: 1000 yd. zero	-1.5"	56.8"	78.2"	101.7"	101.8"	0.0"
VELOCITY (fps)	2800	2470	2316	2027	1893	1421
ENERGY (ft. lbs.)	2821	2195	1929	1479	1289	726
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.5"	-43.2"	-73.4"	-306.2"
TRAJ: 300 yd. zero	-1.5"	5.0"	0.0"	-30.7"	-58.3"	-281.1"
TRAJ: 500 yd. zero	-1.5"	17.3"	18.4"	0.0"	-21.4"	-219.7"
TRAJ: 600 yd. zero	-1.5"	24.5"	29.2"	17.9"	0.0"	-183.8"
TRAJ: 1000 yd. zero	-1.5"	61.2"	84.3"	109.9"	110.3"	0.0"
VELOCITY (fps)	2700	2378	2228	1947	1816	1363
ENERGY (ft. lbs.)	2623	2035	1785	1364	1187	669
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.5"	-48.0"	-81.9"	-337.3"
TRAJ: 300 yd. zero	-1.5"	5.7"	0.0"	-33.8"	-64.8"	-308.9"
TRAJ: 500 yd. zero	-1.5"	19.2"	20.3"	0.0"	-24.2"	-241.2"
TRAJ: 600 yd. zero	-1.5"	27.3"	32.4"	20.2"	0.0"	-200.8"
TRAJ: 1000 yd. zero	-1.5"	67.5"	92.7"	120.6"	120.5"	0.0"
VELOCITY (fps)	2600	2287	2140	1868	1741	1308
ENERGY (ft. lbs.)	2432	1881	1648	1255	1091	616
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.2"	-51.6"	-88.2"	-365.6"
TRAJ: 300 yd. zero	-1.5"	6.1"	0.0"	-36.3"	-69.7"	-334.9"
TRAJ: 500 yd. zero	-1.5"	20.7"	21.8"	0.0"	-26.1"	-262.2"
TRAJ: 600 yd. zero	-1.5"	29.4"	34.9"	21.8"	0.0"	-218.6"
TRAJ: 1000 yd. zero	-1.5"	73.1"	100.5"	131.1"	131.2"	0.0"
VELOCITY (fps)	2500	2195	2053	1789	1667	1257
ENERGY (ft. lbs.)	2249	1734	1517	1151	1000	568
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.9"	-55.7"	-95.5"	-396.8"
TRAJ: 300 yd. zero	-1.5"	6.7"	0.0"	-39.1"	-75.5"	-363.5"
TRAJ: 500 yd. zero	-1.5"	22.3"	23.5"	0.0"	-28.5"	-285.3"
TRAJ: 600 yd. zero	-1.5"	31.8"	37.8"	23.8"	0.0"	-237.6"
TRAJ: 1000 yd. zero	-1.5"	79.4"	109.1"	142.7"	142.6"	0.0"
VELOCITY (fps)	2400	2104	1966	1710	1595	1208
ENERGY (ft. lbs.)	2072	1893	1391	1053	915	525
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.8"	-61.9"	-105.7"	-434.8"
TRAJ: 300 yd. zero	-1.5"	7.2"	0.0"	-43.8"	-84.0"	-398.6"
TRAJ: 500 yd. zero	-1.5"	24.8"	26.3"	0.0"	-31.4"	-311.0"
TRAJ: 600 yd. zero	-1.5"	35.2"	42.0"	26.2"	0.0"	-258.6"
TRAJ: 1000 yd. zero	-1.5"	87.0"	119.6"	155.5"	155.2"	0.0"
VELOCITY (fps)	2300	2013	1879	1634	1513	1159
ENERGY (ft. lbs.)	1903	1458	1271	960	824	483
TRAJ: 200 yd. zero	-1.5"	0.0"	-11.8"	-67.8"	-114.9"	-476.3"
TRAJ: 300 yd. zero	-1.5"	7.9"	0.0"	-48.0"	-91.2"	-436.8"
TRAJ: 500 yd. zero	-1.5"	27.1"	28.8"	0.0"	-33.5"	-340.6"
TRAJ: 600 yd. zero	-1.5"	38.3"	45.6"	28.0"	0.0"	-284.7"
TRAJ: 1000 yd. zero	-1.5"	95.3"	131.1"	170.3"	170.8"	0.0"

**7 MM (.284" Dia.) 162 GRAIN BOAT TAIL SPIRE POINT**

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .520

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2630	2454	2130	1979	1481
ENERGY (ft. lbs.)	3238	2489	2167	1632	1409	768
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.5"	-37.5"	-64.0"	-272.9"
TRAJ: 300 yd. zero	-1.5"	4.3"	0.0"	-26.7"	-51.0"	-251.2"
TRAJ: 500 yd. zero	-1.5"	15.0"	16.0"	0.0"	-18.9"	-197.8"
TRAJ: 600 yd. zero	-1.5"	21.4"	25.5"	15.8"	0.0"	-166.2"
TRAJ: 1000 yd. zero	-1.5"	54.6"	75.4"	98.9"	99.7"	0.0"

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2900	2537	2366	2050	1903	1404
ENERGY (ft. lbs.)	3026	2316	2014	1512	1303	709
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.0"	- 40.5"	- 69.0"	- 294.4"
TRAJ: 300 yd. zero	- 1.5"	4.7"	0.0"	- 28.8"	- 55.0"	- 271.0"
TRAJ: 500 yd. zero	- 1.5"	16.2"	17.3"	0.0"	- 20.4"	- 213.3"
TRAJ: 600 yd. zero	- 1.5"	23.0"	27.5"	17.0"	0.0"	- 179.3"
TRAJ: 1000 yd. zero	- 1.5"	58.9"	81.3"	108.7"	107.6"	0.0"
VELOCITY (fps)	2800	2445	2278	1970	1827	1344
ENERGY (ft. lbs.)	2821	2151	1867	1396	1201	650
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.6"	- 43.9"	- 74.8"	- 316.0"
TRAJ: 300 yd. zero	- 1.5"	5.1"	0.0"	- 31.2"	- 59.6"	- 290.5"
TRAJ: 500 yd. zero	- 1.5"	17.8"	18.7"	0.0"	- 22.1"	- 228.1"
TRAJ: 600 yd. zero	- 1.5"	25.0"	29.8"	18.4"	0.0"	- 191.2"
TRAJ: 1000 yd. zero	- 1.5"	63.2"	87.2"	114.1"	114.8"	0.0"
VELOCITY (fps)	2700	2353	2191	1892	1753	1292
ENERGY (ft. lbs.)	2823	1992	1727	1288	1106	601
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.2"	- 47.4"	- 81.0"	- 343.5"
TRAJ: 300 yd. zero	- 1.5"	5.5"	0.0"	- 33.7"	- 64.4"	- 318.0"
TRAJ: 500 yd. zero	- 1.5"	19.0"	20.2"	0.0"	- 24.0"	- 248.5"
TRAJ: 600 yd. zero	- 1.5"	27.0"	32.2"	20.0"	0.0"	- 208.5"
TRAJ: 1000 yd. zero	- 1.5"	68.7"	94.8"	124.3"	125.1"	0.0"
VELOCITY (fps)	2600	2262	2105	1814	1680	1244
ENERGY (ft. lbs.)	2432	1841	1594	1184	1016	557
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.9"	- 51.5"	- 88.0"	- 373.4"
TRAJ: 300 yd. zero	- 1.5"	6.0"	0.0"	- 36.6"	- 70.1"	- 343.6"
TRAJ: 500 yd. zero	- 1.5"	20.6"	22.0"	0.0"	- 26.1"	- 270.2"
TRAJ: 600 yd. zero	- 1.5"	29.3"	35.1"	21.8"	0.0"	- 226.6"
TRAJ: 1000 yd. zero	- 1.5"	74.7"	103.1"	135.1"	136.0"	0.0"
VELOCITY (fps)	2500	2171	2018	1736	1608	1197
ENERGY (ft. lbs.)	2249	1696	1465	1084	930	516
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.8"	- 56.2"	- 95.8"	- 407.0"
TRAJ: 300 yd. zero	- 1.5"	6.5"	0.0"	- 39.8"	- 76.2"	- 374.3"
TRAJ: 500 yd. zero	- 1.5"	22.5"	23.9"	0.0"	- 28.3"	- 294.5"
TRAJ: 600 yd. zero	- 1.5"	31.9"	38.1"	23.7"	0.0"	- 247.2"
TRAJ: 1000 yd. zero	- 1.5"	81.4"	112.3"	147.3"	148.4"	0.0"
VELOCITY (fps)	2400	2081	1932	1660	1538	1156
ENERGY (ft. lbs.)	2072	1558	1343	991	851	481
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.7"	- 61.6"	- 104.8"	- 443.8"
TRAJ: 300 yd. zero	- 1.5"	7.2"	0.0"	- 43.6"	- 83.2"	- 407.9"
TRAJ: 500 yd. zero	- 1.5"	24.7"	26.2"	0.0"	- 30.8"	- 320.5"
TRAJ: 600 yd. zero	- 1.5"	34.9"	41.6"	25.7"	0.0"	- 269.2"
TRAJ: 1000 yd. zero	- 1.5"	88.8"	122.4"	160.3"	161.5"	0.0"
VELOCITY (fps)	2300	1990	1846	1585	1469	1119
ENERGY (ft. lbs.)	1903	1425	1226	904	776	451
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 11.8"	- 67.5"	- 114.6"	- 484.3"
TRAJ: 300 yd. zero	- 1.5"	7.9"	0.0"	- 47.9"	- 91.0"	- 444.9"
TRAJ: 500 yd. zero	- 1.5"	27.0"	28.7"	0.0"	- 33.5"	- 349.1"
TRAJ: 600 yd. zero	- 1.5"	38.2"	45.5"	28.0"	0.0"	- 293.2"
TRAJ: 1000 yd. zero	- 1.5"	96.9"	133.5"	174.6"	176.0"	0.0"

**7 MM (.284" Dia.) 175 GRAIN SPIRE POINT**  
**SECTIONAL DENSITY: .310 BALLISTIC COEFFICIENT: .506**

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2900	2528	2355	2033	1885	1373
ENERGY (ft. lbs.)	3269	2485	2156	1607	1381	733
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.1"	- 41.8"	- 71.3"	- 304.3"
TRAJ: 300 yd. zero	- 1.5"	4.8"	0.0"	- 29.8"	- 56.9"	- 280.3"
TRAJ: 500 yd. zero	- 1.5"	16.7"	17.9"	0.0"	- 21.1"	- 220.5"
TRAJ: 600 yd. zero	- 1.5"	23.8"	28.5"	17.6"	0.0"	- 185.3"
TRAJ: 1000 yd. zero	- 1.5"	60.9"	84.1"	110.3"	111.2"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2800	2437	2288	1955	1810	1320
ENERGY (ft. lbs.)	3047	2308	1999	1485	1274	677
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.7"	- 45.0"	- 76.8"	- 329.2"
TRAJ: 300 yd. zero	- 1.5"	5.2"	0.0"	- 32.0"	- 61.1"	- 303.3"
TRAJ: 500 yd. zero	- 1.5"	18.0"	19.2"	0.0"	- 22.6"	- 239.2"
TRAJ: 600 yd. zero	- 1.5"	25.8"	30.6"	18.9"	0.0"	- 201.4"
TRAJ: 1000 yd. zero	- 1.5"	65.9"	91.0"	119.6"	120.9"	0.0"
VELOCITY (fps)	2700	2345	2181	1877	1737	1269
ENERGY (ft. lbs.)	2833	2138	1849	1389	1172	626
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.4"	- 48.4"	- 82.6"	- 356.8"
TRAJ: 300 yd. zero	- 1.5"	5.6"	0.0"	- 34.4"	- 65.8"	- 328.7"
TRAJ: 500 yd. zero	- 1.5"	19.4"	20.7"	0.0"	- 24.4"	- 259.8"
TRAJ: 600 yd. zero	- 1.5"	27.6"	32.9"	20.4"	0.0"	- 218.9"
TRAJ: 1000 yd. zero	- 1.5"	71.4"	98.6"	129.9"	131.4"	0.0"
VELOCITY (fps)	2600	2255	2095	1799	1665	1222
ENERGY (ft. lbs.)	2627	1976	1706	1258	1077	580
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.1"	- 53.4"	- 90.9"	- 389.1"
TRAJ: 300 yd. zero	- 1.5"	6.1"	0.0"	- 38.2"	- 72.6"	- 358.7"
TRAJ: 500 yd. zero	- 1.5"	21.4"	22.9"	0.0"	- 26.7"	- 282.2"
TRAJ: 600 yd. zero	- 1.5"	30.3"	36.3"	22.3"	0.0"	- 237.6"
TRAJ: 1000 yd. zero	- 1.5"	77.8"	107.6"	141.1"	142.6"	0.0"
VELOCITY (fps)	2500	2164	2009	1723	1594	1179
ENERGY (ft. lbs.)	2429	1821	1569	1154	988	540
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.4"	- 58.9"	- 100.1"	- 426.1"
TRAJ: 300 yd. zero	- 1.5"	8.9"	0.0"	- 41.5"	- 79.3"	- 391.4"
TRAJ: 500 yd. zero	- 1.5"	23.6"	25.0"	0.0"	- 29.4"	- 308.2"
TRAJ: 600 yd. zero	- 1.5"	33.4"	39.7"	24.5"	0.0"	- 259.1"
TRAJ: 1000 yd. zero	- 1.5"	85.2"	117.4"	154.1"	155.5"	0.0"
VELOCITY (fps)	2400	2074	1923	1648	1525	1141
ENERGY (ft. lbs.)	2239	1672	1438	1055	904	506
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 11.3"	- 64.5"	- 109.9"	- 463.1"
TRAJ: 300 yd. zero	- 1.5"	7.6"	0.0"	- 45.6"	- 87.1"	- 425.1"
TRAJ: 500 yd. zero	- 1.5"	25.8"	27.4"	0.0"	- 32.4"	- 333.9"
TRAJ: 600 yd. zero	- 1.5"	36.6"	43.6"	27.0"	0.0"	- 279.9"
TRAJ: 1000 yd. zero	- 1.5"	92.6"	127.6"	167.0"	167.9"	0.0"
VELOCITY (fps)	2300	1984	1838	1574	1447	1096
ENERGY (ft. lbs.)	2056	1530	1313	963	813	467
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 12.4"	- 69.8"	- 118.6"	- 504.4"
TRAJ: 300 yd. zero	- 1.5"	8.3"	0.0"	- 49.0"	- 93.7"	- 462.8"
TRAJ: 500 yd. zero	- 1.5"	27.9"	29.4"	0.0"	- 34.8"	- 364.7"
TRAJ: 600 yd. zero	- 1.5"	39.6"	46.9"	29.1"	0.0"	- 306.6"
TRAJ: 1000 yd. zero	- 1.5"	100.9"	138.9"	182.4"	184.0"	0.0"
VELOCITY (fps)	2200	1894	1753	1491	1370	1061
ENERGY (ft. lbs.)	1881	1394	1194	864	730	437
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 13.7"	- 76.9"	- 131.6"	- 554.5"
TRAJ: 300 yd. zero	- 1.5"	9.2"	0.0"	- 53.9"	- 104.0"	- 508.5"
TRAJ: 500 yd. zero	- 1.5"	30.8"	32.4"	0.0"	- 39.3"	- 400.7"
TRAJ: 600 yd. zero	- 1.5"	43.9"	52.0"	32.8"	0.0"	- 335.0"
TRAJ: 1000 yd. zero	- 1.5"	110.9"	152.6"	200.4"	201.0"	0.0"

**30 Caliber (.308" Dia.) 168 GRAIN BOAT TAIL HOLLOW POINT**

SECTIONAL DENSITY: .253 BALLISTIC COEFFICIENT: .505

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3300	2899	2709	2353	2188	1612
ENERGY (ft. lbs.)	4063	3136	2739	2066	1786	969
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 5.2"	- 31.1"	- 53.6"	- 228.5"
TRAJ: 300 yd. zero	- 1.5"	3.5"	0.0"	- 22.3"	- 43.1"	- 211.0"
TRAJ: 500 yd. zero	- 1.5"	12.4"	13.4"	0.0"	- 16.2"	- 166.3"
TRAJ: 600 yd. zero	- 1.5"	17.9"	21.6"	13.6"	0.0"	- 139.1"
TRAJ: 1000 yd. zero	- 1.5"	45.7"	63.3"	83.2"	83.5"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3200	2806	2620	2272	2111	1552
ENERGY (ft. lbs.)	3821	2938	2561	1926	1662	899
TRAJ: 200 yd. zero	-1.5"	0.0"	-5.8"	-33.4"	-57.5"	-244.1"
TRAJ: 300 yd. zero	-1.5"	3.9"	0.0"	-23.8"	-45.9"	-224.8"
TRAJ: 500 yd. zero	-1.5"	13.4"	14.3"	0.0"	-17.3"	-177.1"
TRAJ: 600 yd. zero	-1.5"	19.2"	23.0"	14.5"	0.0"	-148.2"
TRAJ: 1000 yd. zero	-1.5"	48.8"	67.4"	88.8"	89.0"	0.0"
VELOCITY (fps)	3100	2713	2530	2191	2034	1484
ENERGY (ft. lbs.)	3586	2746	2389	1792	1544	821
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.2"	-35.7"	-61.3"	-262.3"
TRAJ: 300 yd. zero	-1.5"	4.1"	0.0"	-25.4"	-48.9"	-241.6"
TRAJ: 500 yd. zero	-1.5"	14.3"	15.2"	0.0"	-18.4"	-190.7"
TRAJ: 600 yd. zero	-1.5"	20.5"	24.5"	15.4"	0.0"	-159.9"
TRAJ: 1000 yd. zero	-1.5"	52.5"	72.5"	95.4"	96.0"	0.0"
VELOCITY (fps)	3000	2620	2442	2111	1958	1427
ENERGY (ft. lbs.)	3358	2562	2225	1663	1431	759
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.6"	-38.9"	-66.4"	-282.6"
TRAJ: 300 yd. zero	-1.5"	4.4"	0.0"	-27.8"	-53.1"	-260.4"
TRAJ: 500 yd. zero	-1.5"	15.6"	16.7"	0.0"	-19.7"	-204.8"
TRAJ: 600 yd. zero	-1.5"	22.1"	26.6"	16.5"	0.0"	-171.8"
TRAJ: 1000 yd. zero	-1.5"	56.5"	78.1"	102.4"	103.1"	0.0"
VELOCITY (fps)	2900	2528	2354	2032	1883	1371
ENERGY (ft. lbs.)	3138	2384	2068	1540	1323	701
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.1"	-41.7"	-71.2"	-304.1"
TRAJ: 300 yd. zero	-1.5"	4.8"	0.0"	-29.8"	-56.9"	-280.1"
TRAJ: 500 yd. zero	-1.5"	16.7"	17.9"	0.0"	-21.1"	-220.5"
TRAJ: 600 yd. zero	-1.5"	23.8"	28.5"	17.6"	0.0"	-185.3"
TRAJ: 1000 yd. zero	-1.5"	60.8"	84.1"	110.3"	111.2"	0.0"
VELOCITY (fps)	2800	2436	2267	1953	1809	1318
ENERGY (ft. lbs.)	2925	2214	1917	1423	1220	648
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.7"	-44.9"	-76.5"	-329.1"
TRAJ: 300 yd. zero	-1.5"	5.2"	0.0"	-31.9"	-61.0"	-303.3"
TRAJ: 500 yd. zero	-1.5"	18.0"	19.2"	0.0"	-22.6"	-239.3"
TRAJ: 600 yd. zero	-1.5"	25.5"	30.5"	18.9"	0.0"	-201.5"
TRAJ: 1000 yd. zero	-1.5"	65.8"	91.0"	119.7"	120.9"	0.0"
VELOCITY (fps)	2700	2345	2180	1875	1735	1267
ENERGY (ft. lbs.)	2720	2051	1773	1312	1123	599
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.3"	-48.4"	-83.8"	-359.2"
TRAJ: 300 yd. zero	-1.5"	5.8"	0.0"	-34.4"	-67.0"	-331.2"
TRAJ: 500 yd. zero	-1.5"	19.4"	20.7"	0.0"	-25.7"	-262.3"
TRAJ: 600 yd. zero	-1.5"	28.0"	33.5"	21.5"	0.0"	-219.4"
TRAJ: 1000 yd. zero	-1.5"	71.9"	99.4"	131.2"	131.7"	0.0"
VELOCITY (fps)	2600	2254	2094	1798	1663	1220
ENERGY (ft. lbs.)	2522	1896	1636	1206	1032	555
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.5"	-54.0"	-91.7"	-390.8"
TRAJ: 300 yd. zero	-1.5"	6.4"	0.0"	-38.1"	-72.6"	-359.0"
TRAJ: 500 yd. zero	-1.5"	21.6"	22.9"	0.0"	-26.7"	-282.6"
TRAJ: 600 yd. zero	-1.5"	30.6"	36.3"	22.3"	0.0"	-238.0"
TRAJ: 1000 yd. zero	-1.5"	78.2"	107.7"	141.3"	142.8"	0.0"
VELOCITY (fps)	2500	2164	2008	1722	1593	1178
ENERGY (ft. lbs.)	2332	1747	1505	1106	947	517
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.3"	-58.8"	-100.0"	-426.3"
TRAJ: 300 yd. zero	-1.5"	6.9"	0.0"	-41.5"	-79.2"	-391.7"
TRAJ: 500 yd. zero	-1.5"	23.5"	24.9"	0.0"	-29.4"	-308.6"
TRAJ: 600 yd. zero	-1.5"	33.3"	39.6"	24.5"	0.0"	-259.6"
TRAJ: 1000 yd. zero	-1.5"	85.3"	117.5"	154.3"	155.8"	0.0"
VELOCITY (fps)	2400	2073	1922	1646	1513	1134
ENERGY (ft. lbs.)	2149	1604	1379	1011	855	480
TRAJ: 200 yd. zero	-1.5"	0.0"	-11.3"	-64.4"	-109.7"	-465.3"
TRAJ: 300 yd. zero	-1.5"	7.6"	0.0"	-45.5"	-87.0"	-427.5"
TRAJ: 500 yd. zero	-1.5"	25.8"	27.3"	0.0"	-32.4"	-336.4"
TRAJ: 600 yd. zero	-1.5"	36.6"	43.5"	27.0"	0.0"	-282.4"
TRAJ: 1000 yd. zero	-1.5"	93.1"	128.3"	168.2"	169.5"	0.0"

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2300	1983	1837	1573	1445	1095
ENERGY (ft. lbs.)	1974	1468	1259	923	779	447
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 12.4"	- 69.7"	- 118.5"	- 505.1"
TRAJ: 300 yd. zero	- 1.5"	8.3"	0.0"	- 48.9"	- 93.6"	- 463.6"
TRAJ: 500 yd. zero	- 1.5"	27.9"	29.4"	0.0"	- 34.8"	- 365.6"
TRAJ: 600 yd. zero	- 1.5"	39.5"	46.8"	29.0"	0.0"	- 307.5"
TRAJ: 1000 yd. zero	- 1.5"	101.0"	139.1"	182.8"	184.6"	0.0"

**30 Caliber (.308" Dia.) 190 GRAIN BOAT TAIL HOLLOW POINT**

SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .552

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2745	2576	2261	2113	1596
ENERGY (ft. lbs.)	4055	3179	2801	2156	1885	1074
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.0"	- 35.0"	- 59.6"	- 248.1"
TRAJ: 300 yd. zero	- 1.5"	4.0"	0.0"	- 24.9"	- 47.6"	- 228.0"
TRAJ: 500 yd. zero	- 1.5"	14.0"	15.0"	0.0"	- 17.6"	- 178.1"
TRAJ: 600 yd. zero	- 1.5"	19.9"	23.8"	14.7"	0.0"	- 148.7"
TRAJ: 1000 yd. zero	- 1.5"	49.6"	68.4"	89.1"	89.2"	0.0"
VELOCITY (fps)	3000	2651	2487	2179	2035	1535
ENERGY (ft. lbs.)	3798	2967	2609	2003	1748	994
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 6.4"	- 37.3"	- 63.5"	- 267.0"
TRAJ: 300 yd. zero	- 1.5"	4.3"	0.0"	- 26.5"	- 50.6"	- 245.6"
TRAJ: 500 yd. zero	- 1.5"	14.9"	16.0"	0.0"	- 18.7"	- 192.4"
TRAJ: 600 yd. zero	- 1.5"	21.2"	25.3"	15.6"	0.0"	- 161.1"
TRAJ: 1000 yd. zero	- 1.5"	53.4"	73.7"	96.2"	96.7"	0.0"
VELOCITY (fps)	2900	2558	2398	2098	1958	1465
ENERGY (ft. lbs.)	3549	2762	2426	1857	1618	905
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.2"	- 40.4"	- 68.5"	- 286.9"
TRAJ: 300 yd. zero	- 1.5"	4.8"	0.0"	- 28.3"	- 54.0"	- 262.8"
TRAJ: 500 yd. zero	- 1.5"	16.2"	17.0"	0.0"	- 19.9"	- 206.0"
TRAJ: 600 yd. zero	- 1.5"	22.8"	27.0"	16.7"	0.0"	- 172.7"
TRAJ: 1000 yd. zero	- 1.5"	57.4"	78.9"	103.0"	103.6"	0.0"
VELOCITY (fps)	2800	2466	2309	2017	1881	1406
ENERGY (ft. lbs.)	3308	2565	2250	1717	1494	835
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 7.7"	- 44.1"	- 75.4"	- 313.4"
TRAJ: 300 yd. zero	- 1.5"	5.2"	0.0"	- 31.1"	- 59.8"	- 287.4"
TRAJ: 500 yd. zero	- 1.5"	17.7"	18.7"	0.0"	- 22.4"	- 225.1"
TRAJ: 600 yd. zero	- 1.5"	25.1"	29.9"	18.7"	0.0"	- 187.7"
TRAJ: 1000 yd. zero	- 1.5"	62.7"	86.2"	112.6"	112.6"	0.0"
VELOCITY (fps)	2700	2374	2221	1937	1805	1350
ENERGY (ft. lbs.)	3076	2378	2082	1584	1376	769
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 8.4"	- 47.4"	- 80.9"	- 337.9"
TRAJ: 300 yd. zero	- 1.5"	5.6"	0.0"	- 33.4"	- 64.1"	- 309.9"
TRAJ: 500 yd. zero	- 1.5"	19.0"	20.0"	0.0"	- 24.0"	- 243.0"
TRAJ: 600 yd. zero	- 1.5"	27.0"	32.1"	20.1"	0.0"	- 202.9"
TRAJ: 1000 yd. zero	- 1.5"	67.6"	93.0"	121.5"	121.8"	0.0"
VELOCITY (fps)	2600	2282	2134	1858	1731	1296
ENERGY (ft. lbs.)	2853	2198	1922	1457	1264	709
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.0"	- 52.0"	- 88.4"	- 366.7"
TRAJ: 300 yd. zero	- 1.5"	6.1"	0.0"	- 36.8"	- 70.3"	- 336.4"
TRAJ: 500 yd. zero	- 1.5"	20.8"	22.1"	0.0"	- 26.0"	- 262.6"
TRAJ: 600 yd. zero	- 1.5"	29.5"	35.2"	21.7"	0.0"	- 219.2"
TRAJ: 1000 yd. zero	- 1.5"	73.3"	100.9"	131.3"	131.6"	0.0"
VELOCITY (fps)	2500	2191	2047	1779	1657	1245
ENERGY (ft. lbs.)	2637	2026	1768	1336	1159	654
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.8"	- 56.1"	- 95.8"	- 398.5"
TRAJ: 300 yd. zero	- 1.5"	6.6"	0.0"	- 39.7"	- 76.2"	- 365.8"
TRAJ: 500 yd. zero	- 1.5"	22.5"	23.9"	0.0"	- 28.4"	- 286.2"
TRAJ: 600 yd. zero	- 1.5"	32.0"	38.1"	23.7"	0.0"	- 238.7"
TRAJ: 1000 yd. zero	- 1.5"	79.7"	109.7"	143.1"	143.3"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2400	2100	1960	1702	1585	1198
ENERGY (ft. lbs.)	2431	1861	1622	1222	1060	608
TRAJ: 200 yd. zero	-1.5"	0.0"	-10.8"	-61.1"	-104.6"	-435.0"
TRAJ: 300 yd. zero	-1.5"	7.1"	0.0"	-43.3"	-83.2"	-399.4"
TRAJ: 500 yd. zero	-1.5"	24.5"	26.0"	0.0"	-31.2"	-312.8"
TRAJ: 600 yd. zero	-1.5"	34.9"	41.8"	26.1"	0.0"	-280.8"
TRAJ: 1000 yd. zero	-1.5"	87.0"	119.8"	156.4"	156.4"	0.0"
VELOCITY (fps)	2300	2009	1874	1625	1504	1150
ENERGY (ft. lbs.)	2232	1703	1481	1115	954	558
TRAJ: 200 yd. zero	-1.5"	0.0"	-12.3"	-68.1"	-115.1"	-480.7"
TRAJ: 300 yd. zero	-1.5"	8.2"	0.0"	-47.5"	-90.5"	-439.7"
TRAJ: 500 yd. zero	-1.5"	27.3"	28.6"	0.0"	-33.4"	-344.5"
TRAJ: 600 yd. zero	-1.5"	38.4"	45.3"	27.9"	0.0"	-288.8"
TRAJ: 1000 yd. zero	-1.5"	96.2"	131.9"	172.3"	173.3"	0.0"

**30 Caliber (.308" Dia.) 190 GRAIN BOAT TAIL SPIRE POINT**

SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .515

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2719	2538	2203	2047	1508
ENERGY (ft. lbs.)	4055	3120	2718	2048	1768	980
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.0"	-34.9"	-59.6"	-255.0"
TRAJ: 300 yd. zero	-1.5"	4.0"	0.0"	-24.9"	-47.6"	-234.9"
TRAJ: 500 yd. zero	-1.5"	14.0"	15.0"	0.0"	-17.7"	-185.0"
TRAJ: 600 yd. zero	-1.5"	19.9"	23.8"	14.8"	0.0"	-155.5"
TRAJ: 1000 yd. zero	-1.5"	51.0"	70.5"	92.5"	93.4"	0.0"
VELOCITY (fps)	3000	2626	2449	2122	1970	1451
ENERGY (ft. lbs.)	3798	2910	2531	1900	1638	888
TRAJ: 200 yd. zero	-1.5"	0.0"	-6.5"	-37.7"	-64.3"	-274.3"
TRAJ: 300 yd. zero	-1.5"	4.3"	0.0"	-26.8"	-51.3"	-252.5"
TRAJ: 500 yd. zero	-1.5"	15.1"	16.1"	0.0"	-19.0"	-198.8"
TRAJ: 600 yd. zero	-1.5"	21.5"	25.7"	15.9"	0.0"	-167.0"
TRAJ: 1000 yd. zero	-1.5"	54.9"	75.8"	99.4"	100.2"	0.0"
VELOCITY (fps)	2900	2533	2361	2042	1894	1394
ENERGY (ft. lbs.)	3549	2708	2352	1760	1514	820
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.0"	-40.7"	-69.4"	-296.1"
TRAJ: 300 yd. zero	-1.5"	4.7"	0.0"	-29.0"	-55.4"	-272.7"
TRAJ: 500 yd. zero	-1.5"	16.3"	17.4"	0.0"	-20.5"	-214.6"
TRAJ: 600 yd. zero	-1.5"	23.1"	27.7"	17.1"	0.0"	-180.3"
TRAJ: 1000 yd. zero	-1.5"	59.2"	81.8"	107.3"	108.2"	0.0"
VELOCITY (fps)	2800	2441	2273	1963	1819	1334
ENERGY (ft. lbs.)	3308	2514	2180	1626	1396	751
TRAJ: 200 yd. zero	-1.5"	0.0"	-7.6"	-44.0"	-75.0"	-318.3"
TRAJ: 300 yd. zero	-1.5"	5.1"	0.0"	-31.3"	-59.8"	-292.9"
TRAJ: 500 yd. zero	-1.5"	17.6"	18.8"	0.0"	-22.2"	-230.3"
TRAJ: 600 yd. zero	-1.5"	25.0"	29.9"	18.5"	0.0"	-193.2"
TRAJ: 1000 yd. zero	-1.5"	63.7"	87.9"	115.2"	115.9"	0.0"
VELOCITY (fps)	2700	2350	2187	1885	1745	1283
ENERGY (ft. lbs.)	3076	2330	2018	1499	1285	695
TRAJ: 200 yd. zero	-1.5"	0.0"	-8.2"	-47.7"	-81.4"	-346.2"
TRAJ: 300 yd. zero	-1.5"	5.5"	0.0"	-33.9"	-64.9"	-318.7"
TRAJ: 500 yd. zero	-1.5"	19.1"	20.4"	0.0"	-24.1"	-250.8"
TRAJ: 600 yd. zero	-1.5"	27.1"	32.5"	20.2"	0.0"	-210.5"
TRAJ: 1000 yd. zero	-1.5"	69.2"	95.6"	125.4"	126.3"	0.0"
VELOCITY (fps)	2600	2259	2100	1807	1673	1236
ENERGY (ft. lbs.)	2853	2153	1861	1378	1181	645
TRAJ: 200 yd. zero	-1.5"	0.0"	-9.0"	-51.8"	-88.3"	-375.7"
TRAJ: 300 yd. zero	-1.5"	6.0"	0.0"	-36.8"	-70.2"	-345.6"
TRAJ: 500 yd. zero	-1.5"	20.7"	22.1"	0.0"	-26.0"	-272.0"
TRAJ: 600 yd. zero	-1.5"	29.4"	35.1"	21.7"	0.0"	-228.5"
TRAJ: 1000 yd. zero	-1.5"	75.1"	103.7"	136.0"	137.1"	0.0"



RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	2500	2168	2014	1730	1601	1190
ENERGY (ft. lbs.)	2637	1983	1712	1263	1082	598
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 9.8"	- 56.3"	- 96.2"	- 409.4"
TRAJ: 300 yd. zero	- 1.5"	6.5"	0.0"	- 39.9"	- 76.5"	- 376.7"
TRAJ: 500 yd. zero	- 1.5"	22.5"	24.0"	0.0"	- 28.6"	- 296.8"
TRAJ: 600 yd. zero	- 1.5"	32.1"	38.3"	23.8"	0.0"	- 249.1"
TRAJ: 1000 yd. zero	- 1.5"	81.9"	113.0"	148.4"	149.5"	0.0"
VELOCITY (fps)	2400	2078	1928	1654	1531	1150
ENERGY (ft. lbs.)	2431	1822	1569	1154	989	558
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 10.7"	- 61.8"	- 105.3"	- 446.2"
TRAJ: 300 yd. zero	- 1.5"	7.2"	0.0"	- 43.8"	- 83.7"	- 410.2"
TRAJ: 500 yd. zero	- 1.5"	24.7"	26.3"	0.0"	- 31.1"	- 322.6"
TRAJ: 600 yd. zero	- 1.5"	35.1"	41.9"	25.9"	0.0"	- 270.7"
TRAJ: 1000 yd. zero	- 1.5"	89.3"	123.1"	161.3"	162.5"	0.0"
VELOCITY (fps)	2300	1988	1842	1580	1462	1114
ENERGY (ft. lbs.)	2232	1668	1432	1053	902	524
TRAJ: 200 yd. zero	- 1.5"	0.0"	- 11.9"	- 67.7"	- 115.5"	- 486.5"
TRAJ: 300 yd. zero	- 1.5"	8.0"	0.0"	- 47.8"	- 91.6"	- 446.8"
TRAJ: 500 yd. zero	- 1.5"	27.1"	28.7"	0.0"	- 34.2"	- 351.0"
TRAJ: 600 yd. zero	- 1.5"	38.5"	45.8"	28.5"	0.0"	- 293.9"
TRAJ: 1000 yd. zero	- 1.5"	97.3"	134.0"	175.5"	176.4"	0.0"

## TRAJECTORY TABLES (RIFLE SILHOUETTE)

25 Caliber (.257" Dia.) 100 GRAIN SPIRE POINT

SECTIONAL DENSITY: .216 BALLISTIC COEFFICIENT: .336

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3300	2967	2656	2365	2136	1851
ENERGY (ft. lbs.)	2419	1957	1567	1242	1013	761
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.3"	- 12.7"	- 26.4"	- 55.9"
TRAJ: 200 m. zero	- 1.5"	1.7"	0.0"	- 7.7"	- 20.1"	- 47.6"
TRAJ: 300 m. zero	- 1.5"	4.2"	5.2"	0.0"	- 10.1"	- 34.7"
TRAJ: 385 m. zero	- 1.5"	6.9"	10.4"	7.9"	0.0"	- 21.5"
TRAJ: 500 m. zero	- 1.5"	11.2"	19.0"	20.8"	16.6"	0.0"
VELOCITY (fps)	3200	2874	2568	2283	2060	1782
ENERGY (ft. lbs.)	2274	1835	1464	1158	942	706
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.6"	- 13.6"	- 28.5"	- 60.4"
TRAJ: 200 m. zero	- 1.5"	1.8"	0.0"	- 8.1"	- 21.4"	- 51.2"
TRAJ: 300 m. zero	- 1.5"	4.6"	5.5"	0.0"	- 10.9"	- 37.6"
TRAJ: 385 m. zero	- 1.5"	7.4"	11.2"	8.5"	0.0"	- 23.4"
TRAJ: 500 m. zero	- 1.5"	12.1"	20.5"	22.6"	18.0"	0.0"
VELOCITY (fps)	3100	2780	2480	2202	1984	1715
ENERGY (ft. lbs.)	2134	1716	1366	1077	875	653
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.0"	- 15.0"	- 31.1"	- 65.3"
TRAJ: 200 m. zero	- 1.5"	2.0"	0.0"	- 8.9"	- 23.3"	- 55.2"
TRAJ: 300 m. zero	- 1.5"	5.0"	6.0"	0.0"	- 11.8"	- 40.3"
TRAJ: 385 m. zero	- 1.5"	8.1"	12.1"	9.2"	0.0"	- 24.9"
TRAJ: 500 m. zero	- 1.5"	13.1"	22.1"	24.2"	19.2"	0.0"
VELOCITY (fps)	3000	2686	2392	2122	1910	1649
ENERGY (ft. lbs.)	1999	1602	1271	1000	810	604
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.3"	- 16.2"	- 33.7"	- 71.3"
TRAJ: 200 m. zero	- 1.5"	2.2"	0.0"	- 9.7"	- 25.3"	- 60.4"
TRAJ: 300 m. zero	- 1.5"	5.4"	6.5"	0.0"	- 12.8"	- 44.1"
TRAJ: 385 m. zero	- 1.5"	8.8"	13.2"	10.0"	0.0"	- 27.5"
TRAJ: 500 m. zero	- 1.5"	14.3"	24.2"	26.5"	21.2"	0.0"
VELOCITY (fps)	2900	2592	2306	2042	1836	1585
ENERGY (ft. lbs.)	1868	1492	1181	927	749	558
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.8"	- 17.6"	- 36.6"	- 77.2"
TRAJ: 200 m. zero	- 1.5"	2.4"	0.0"	- 10.3"	- 27.2"	- 65.1"
TRAJ: 300 m. zero	- 1.5"	5.9"	6.9"	0.0"	- 13.9"	- 47.8"
TRAJ: 385 m. zero	- 1.5"	9.5"	14.2"	10.9"	0.0"	- 29.6"
TRAJ: 500 m. zero	- 1.5"	15.5"	26.0"	28.7"	22.9"	0.0"

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2800	2498	2220	1963	1763	1512
ENERGY (ft. lbs.)	1741	1386	1094	856	690	508
TRAJ: 100 m. zero	-1.5"	0.0"	-5.2"	-19.2"	-40.0"	-83.6"
TRAJ: 200 m. zero	-1.5"	2.6"	0.0"	-11.3"	-29.8"	-70.4"
TRAJ: 300 m. zero	-1.5"	6.4"	7.6"	0.0"	-15.2"	-51.4"
TRAJ: 385 m. zero	-1.5"	10.4"	15.5"	11.9"	0.0"	-31.6"
TRAJ: 500 m. zero	-1.5"	16.7"	28.2"	30.9"	24.4"	0.0"
VELOCITY (fps)	2700	2405	2134	1885	1691	1451
ENERGY (ft. lbs.)	1619	1285	1012	789	635	467
TRAJ: 100 m. zero	-1.5"	0.0"	-5.9"	-21.0"	-43.1"	-90.3"
TRAJ: 200 m. zero	-1.5"	3.0"	0.0"	-12.1"	-31.7"	-75.6"
TRAJ: 300 m. zero	-1.5"	7.0"	8.1"	0.0"	-18.1"	-55.3"
TRAJ: 385 m. zero	-1.5"	11.2"	16.5"	12.6"	0.0"	-34.3"
TRAJ: 500 m. zero	-1.5"	18.1"	30.3"	33.2"	26.5"	0.0"
VELOCITY (fps)	2600	2313	2049	1808	1621	1390
ENERGY (ft. lbs.)	1501	1188	933	726	584	429
TRAJ: 100 m. zero	-1.5"	0.0"	-6.4"	-23.0"	-47.5"	-99.1"
TRAJ: 200 m. zero	-1.5"	3.2"	0.0"	-13.4"	-35.1"	-83.1"
TRAJ: 300 m. zero	-1.5"	7.7"	9.0"	0.0"	-17.9"	-60.7"
TRAJ: 385 m. zero	-1.5"	12.3"	18.3"	14.0"	0.0"	-37.4"
TRAJ: 500 m. zero	-1.5"	19.8"	33.2"	36.4"	28.8"	0.0"

**25 Caliber (.257" Dia.) 120 GRAIN HOLLOW POINT**

SECTIONAL DENSITY: .260 BALLISTIC COEFFICIENT: .388

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3100	2822	2558	2311	2115	1888
ENERGY (ft. lbs.)	2561	2122	1744	1423	1192	930
TRAJ: 100 m. zero	-1.5"	0.0"	-3.7"	-14.1"	-29.2"	-60.8"
TRAJ: 200 m. zero	-1.5"	1.9"	0.0"	-8.4"	-21.9"	-51.3"
TRAJ: 300 m. zero	-1.5"	4.7"	5.8"	0.0"	-11.0"	-37.2"
TRAJ: 385 m. zero	-1.5"	7.6"	11.4"	8.6"	0.0"	-22.8"
TRAJ: 500 m. zero	-1.5"	12.2"	20.5"	22.4"	17.6"	0.0"
VELOCITY (fps)	3000	2727	2469	2228	2037	1797
ENERGY (ft. lbs.)	2399	1982	1624	1323	1106	861
TRAJ: 100 m. zero	-1.5"	0.0"	-4.1"	-15.4"	-31.8"	-65.4"
TRAJ: 200 m. zero	-1.5"	2.1"	0.0"	-9.1"	-23.7"	-55.0"
TRAJ: 300 m. zero	-1.5"	5.2"	6.1"	0.0"	-11.9"	-39.6"
TRAJ: 385 m. zero	-1.5"	8.3"	12.4"	9.3"	0.0"	-24.1"
TRAJ: 500 m. zero	-1.5"	13.1"	22.0"	23.8"	18.6"	0.0"
VELOCITY (fps)	2900	2632	2380	2146	1959	1727
ENERGY (ft. lbs.)	2241	1846	1510	1227	1023	795
TRAJ: 100 m. zero	-1.5"	0.0"	-4.6"	-16.6"	-34.3"	-71.0"
TRAJ: 200 m. zero	-1.5"	2.3"	0.0"	-9.7"	-25.3"	-59.3"
TRAJ: 300 m. zero	-1.5"	5.6"	6.5"	0.0"	-12.9"	-43.2"
TRAJ: 385 m. zero	-1.5"	8.9"	13.2"	10.1"	0.0"	-26.4"
TRAJ: 500 m. zero	-1.5"	14.2"	23.8"	25.9"	20.3"	0.0"
VELOCITY (fps)	2800	2537	2292	2064	1883	1658
ENERGY (ft. lbs.)	2090	1716	1400	1135	945	733
TRAJ: 100 m. zero	-1.5"	0.0"	-5.1"	-18.3"	-37.6"	-77.1"
TRAJ: 200 m. zero	-1.5"	2.6"	0.0"	-10.6"	-27.6"	-64.1"
TRAJ: 300 m. zero	-1.5"	6.1"	7.1"	0.0"	-14.0"	-46.4"
TRAJ: 385 m. zero	-1.5"	9.8"	14.4"	10.9"	0.0"	-28.2"
TRAJ: 500 m. zero	-1.5"	15.4"	25.7"	27.9"	21.7"	0.0"
VELOCITY (fps)	2700	2444	2205	1983	1807	1591
ENERGY (ft. lbs.)	1943	1591	1295	1048	870	675
TRAJ: 100 m. zero	-1.5"	0.0"	-5.5"	-19.9"	-40.8"	-84.5"
TRAJ: 200 m. zero	-1.5"	2.8"	0.0"	-11.6"	-30.1"	-70.6"
TRAJ: 300 m. zero	-1.5"	6.7"	7.7"	0.0"	-15.2"	-51.2"
TRAJ: 385 m. zero	-1.5"	10.6"	15.7"	11.9"	0.0"	-31.4"
TRAJ: 500 m. zero	-1.5"	16.9"	28.2"	30.7"	24.2"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2600	2350	2118	1902	1732	1515
ENERGY (ft. lbs.)	1802	1472	1196	964	799	612
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.2"	- 22.0"	- 45.0"	- 91.8"
TRAJ: 200 m. zero	- 1.5"	3.1"	0.0"	- 12.7"	- 33.0"	- 76.3"
TRAJ: 300 m. zero	- 1.5"	7.4"	8.5"	0.0"	- 16.6"	- 55.0"
TRAJ: 385 m. zero	- 1.5"	11.7"	17.2"	13.0"	0.0"	- 33.3"
TRAJ: 500 m. zero	- 1.5"	18.4"	30.5"	33.0"	25.7"	0.0"
VELOCITY (fps)	2500	2257	2031	1822	1658	1451
ENERGY (ft. lbs.)	1666	1358	1100	885	733	561
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.9"	- 24.0"	- 48.5"	- 99.8"
TRAJ: 200 m. zero	- 1.5"	3.5"	0.0"	- 13.5"	- 35.1"	- 82.4"
TRAJ: 300 m. zero	- 1.5"	8.0"	9.1"	0.0"	- 17.6"	- 59.7"
TRAJ: 385 m. zero	- 1.5"	12.8"	18.3"	13.8"	0.0"	- 36.8"
TRAJ: 500 m. zero	- 1.5"	20.0"	33.0"	35.9"	28.3"	0.0"
VELOCITY (fps)	2400	2164	1945	1743	1586	1387
ENERGY (ft. lbs.)	1535	1248	1008	809	671	513
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.5"	- 26.3"	- 53.5"	- 109.5"
TRAJ: 200 m. zero	- 1.5"	3.8"	0.0"	- 15.0"	- 39.1"	- 90.7"
TRAJ: 300 m. zero	- 1.5"	8.8"	10.1"	0.0"	- 19.7"	- 65.6"
TRAJ: 385 m. zero	- 1.5"	13.9"	20.3"	15.4"	0.0"	- 39.9"
TRAJ: 500 m. zero	- 1.5"	21.9"	36.3"	39.4"	30.8"	0.0"

**6.5 MM (.264" Dia.) 129 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .264 BALLISTIC COEFFICIENT: .415

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3300	3030	2773	2528	2332	2084
ENERGY (ft. lbs.)	3120	2630	2203	1831	1558	1245
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.1"	- 11.6"	- 24.3"	- 50.4"
TRAJ: 200 m. zero	- 1.5"	1.6"	0.0"	- 7.0"	- 18.3"	- 42.5"
TRAJ: 300 m. zero	- 1.5"	3.9"	4.7"	0.0"	- 9.3"	- 30.9"
TRAJ: 385 m. zero	- 1.5"	6.3"	9.5"	7.3"	0.0"	- 18.8"
TRAJ: 500 m. zero	- 1.5"	10.1"	17.0"	18.6"	14.5"	0.0"
VELOCITY (fps)	3200	2935	2682	2443	2251	2010
ENERGY (ft. lbs.)	2934	2467	2061	1710	1452	1157
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.4"	- 12.6"	- 26.2"	- 54.4"
TRAJ: 200 m. zero	- 1.5"	1.7"	0.0"	- 7.5"	- 19.6"	- 45.9"
TRAJ: 300 m. zero	- 1.5"	4.2"	5.0"	0.0"	- 10.0"	- 33.3"
TRAJ: 385 m. zero	- 1.5"	6.8"	10.2"	7.8"	0.0"	- 20.3"
TRAJ: 500 m. zero	- 1.5"	10.9"	18.4"	20.0"	15.7"	0.0"
VELOCITY (fps)	3100	2839	2591	2358	2171	1936
ENERGY (ft. lbs.)	2753	2310	1924	1593	1351	1074
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.7"	- 13.6"	- 28.4"	- 58.9"
TRAJ: 200 m. zero	- 1.5"	1.9"	0.0"	- 8.1"	- 21.2"	- 49.5"
TRAJ: 300 m. zero	- 1.5"	4.6"	5.4"	0.0"	- 10.7"	- 35.9"
TRAJ: 385 m. zero	- 1.5"	7.4"	11.0"	8.4"	0.0"	- 22.0"
TRAJ: 500 m. zero	- 1.5"	11.8"	19.8"	21.6"	17.0"	0.0"
VELOCITY (fps)	3000	2744	2501	2274	2092	1863
ENERGY (ft. lbs.)	2579	2157	1792	1481	1254	994
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.1"	- 15.0"	- 30.8"	- 63.3"
TRAJ: 200 m. zero	- 1.5"	2.1"	0.0"	- 8.8"	- 22.9"	- 52.9"
TRAJ: 300 m. zero	- 1.5"	5.0"	5.9"	0.0"	- 11.5"	- 38.1"
TRAJ: 385 m. zero	- 1.5"	8.0"	11.9"	9.0"	0.0"	- 23.1"
TRAJ: 500 m. zero	- 1.5"	12.7"	21.2"	22.9"	17.8"	0.0"
VELOCITY (fps)	2900	2649	2412	2190	2013	1790
ENERGY (ft. lbs.)	2410	2010	1667	1374	1161	918
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.5"	- 16.5"	- 33.8"	- 68.9"
TRAJ: 200 m. zero	- 1.5"	2.3"	0.0"	- 9.6"	- 24.8"	- 57.5"
TRAJ: 300 m. zero	- 1.5"	5.5"	6.4"	0.0"	- 12.4"	- 41.4"
TRAJ: 385 m. zero	- 1.5"	8.7"	12.9"	9.7"	0.0"	- 25.2"
TRAJ: 500 m. zero	- 1.5"	13.8"	23.0"	24.9"	19.4"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2800	2554	2323	2107	1935	1719
ENERGY (ft. lbs.)	2248	1869	1548	1272	1073	848
TRAJ: 100 m. zero	-1.5"	0.0"	-5.0"	-18.1"	-36.7"	-75.4"
TRAJ: 200 m. zero	-1.5"	2.5"	0.0"	-10.5"	-26.9"	-62.7"
TRAJ: 300 m. zero	-1.5"	6.1"	7.0"	0.0"	-13.4"	-45.1"
TRAJ: 385 m. zero	-1.5"	9.5"	14.0"	10.5"	0.0"	-27.7"
TRAJ: 500 m. zero	-1.5"	15.1"	25.1"	27.1"	21.3"	0.0"
VELOCITY (fps)	2700	2460	2235	2025	1857	1649
ENERGY (ft. lbs.)	2089	1733	1431	1175	988	779
TRAJ: 100 m. zero	-1.5"	0.0"	-5.4"	-19.6"	-39.7"	-81.2"
TRAJ: 200 m. zero	-1.5"	2.7"	0.0"	-11.5"	-29.3"	-67.7"
TRAJ: 300 m. zero	-1.5"	6.6"	7.7"	0.0"	-14.5"	-48.5"
TRAJ: 385 m. zero	-1.5"	10.3"	15.2"	11.4"	0.0"	-29.6"
TRAJ: 500 m. zero	-1.5"	16.3"	27.1"	29.1"	22.8"	0.0"
VELOCITY (fps)	2600	2366	2147	1943	1781	1581
ENERGY (ft. lbs.)	1937	1604	1321	1082	908	716
TRAJ: 100 m. zero	-1.5"	0.0"	-6.0"	-21.2"	-43.0"	-87.7"
TRAJ: 200 m. zero	-1.5"	3.0"	0.0"	-12.1"	-31.4"	-72.6"
TRAJ: 300 m. zero	-1.5"	7.1"	8.1"	0.0"	-15.8"	-52.3"
TRAJ: 385 m. zero	-1.5"	11.2"	16.3"	12.3"	0.0"	-31.8"
TRAJ: 500 m. zero	-1.5"	17.5"	29.1"	31.4"	24.5"	0.0"
VELOCITY (fps)	2500	2272	2060	1862	1705	1504
ENERGY (ft. lbs.)	1791	1480	1216	993	833	648
TRAJ: 100 m. zero	-1.5"	0.0"	-6.7"	-23.5"	-47.5"	-96.7"
TRAJ: 200 m. zero	-1.5"	3.4"	0.0"	-13.3"	-34.5"	-79.8"
TRAJ: 300 m. zero	-1.5"	7.8"	8.9"	0.0"	-17.4"	-57.6"
TRAJ: 385 m. zero	-1.5"	12.4"	18.0"	13.6"	0.0"	-34.9"
TRAJ: 500 m. zero	-1.5"	19.4"	32.0"	34.6"	26.9"	0.0"
VELOCITY (fps)	2400	2179	1973	1781	1631	1438
ENERGY (ft. lbs.)	1650	1360	1115	908	762	593
TRAJ: 100 m. zero	-1.5"	0.0"	-7.5"	-26.1"	-52.0"	-106.2"
TRAJ: 200 m. zero	-1.5"	3.8"	0.0"	-14.7"	-37.4"	-87.2"
TRAJ: 300 m. zero	-1.5"	8.7"	9.9"	0.0"	-18.4"	-62.6"
TRAJ: 385 m. zero	-1.5"	13.5"	19.5"	14.4"	0.0"	-38.6"
TRAJ: 500 m. zero	-1.5"	21.2"	34.9"	37.6"	29.8"	0.0"
VELOCITY (fps)	2300	2086	1886	1701	1557	1373
ENERGY (ft. lbs.)	1516	1246	1019	829	695	540
TRAJ: 100 m. zero	-1.5"	0.0"	-8.1"	-28.0"	-56.6"	-115.3"
TRAJ: 200 m. zero	-1.5"	4.1"	0.0"	-15.8"	-40.9"	-95.0"
TRAJ: 300 m. zero	-1.5"	9.4"	10.6"	0.0"	-20.5"	-68.5"
TRAJ: 385 m. zero	-1.5"	14.7"	21.3"	16.0"	0.0"	-41.8"
TRAJ: 500 m. zero	-1.5"	23.1"	38.0"	41.1"	32.2"	0.0"

### 6.5 MM (.264" Dia.) 140 GRAIN SPIRE POINT

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .441

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3200	2950	2711	2484	2301	2070
ENERGY (ft. lbs.)	3184	2706	2285	1918	1647	1332
TRAJ: 100 m. zero	-1.5"	0.0"	-3.3"	-12.5"	-25.7"	-53.0"
TRAJ: 200 m. zero	-1.5"	1.7"	0.0"	-7.5"	-19.2"	-44.6"
TRAJ: 300 m. zero	-1.5"	4.2"	5.0"	0.0"	-9.6"	-32.1"
TRAJ: 385 m. zero	-1.5"	6.7"	10.0"	7.5"	0.0"	-19.6"
TRAJ: 500 m. zero	-1.5"	10.6"	17.9"	19.3"	15.1"	0.0"
VELOCITY (fps)	3100	2854	2620	2398	2220	1994
ENERGY (ft. lbs.)	2988	2533	2134	1788	1533	1237
TRAJ: 100 m. zero	-1.5"	0.0"	-3.6"	-13.5"	-27.7"	-57.2"
TRAJ: 200 m. zero	-1.5"	1.8"	0.0"	-8.0"	-20.7"	-48.1"
TRAJ: 300 m. zero	-1.5"	4.5"	5.4"	0.0"	-10.3"	-34.6"
TRAJ: 385 m. zero	-1.5"	7.2"	10.8"	8.1"	0.0"	-21.2"
TRAJ: 500 m. zero	-1.5"	11.5"	19.3"	20.8"	16.4"	0.0"

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2759	2529	2313	2139	1920
ENERGY (ft. lbs.)	2799	2367	1989	1663	1423	1146
TRAJ: 100 m. zero	-1.5"	0.0"	-4.0"	-14.7"	-30.0"	-61.3"
TRAJ: 200 m. zero	-1.5"	2.0"	0.0"	-8.7"	-22.3"	-51.2"
TRAJ: 300 m. zero	-1.5"	4.9"	5.8"	0.0"	-11.0"	-36.6"
TRAJ: 385 m. zero	-1.5"	7.8"	11.6"	8.6"	0.0"	-22.2"
TRAJ: 500 m. zero	-1.5"	12.3"	20.5"	22.0"	17.1"	0.0"
VELOCITY (fps)	2900	2663	2439	2228	2059	1845
ENERGY (ft. lbs.)	2615	2206	1850	1544	1319	1059
TRAJ: 100 m. zero	-1.5"	0.0"	-4.4"	-16.1"	-32.6"	-66.6"
TRAJ: 200 m. zero	-1.5"	2.2"	0.0"	-9.5"	-24.1"	-55.5"
TRAJ: 300 m. zero	-1.5"	5.4"	6.4"	0.0"	-11.9"	-39.6"
TRAJ: 385 m. zero	-1.5"	8.5"	12.5"	9.3"	0.0"	-24.1"
TRAJ: 500 m. zero	-1.5"	13.3"	22.2"	23.8"	18.6"	0.0"
VELOCITY (fps)	2800	2568	2349	2144	1980	1772
ENERGY (ft. lbs.)	2438	2051	1716	1430	1219	976
TRAJ: 100 m. zero	-1.5"	0.0"	-4.9"	-17.7"	-35.5"	-72.5"
TRAJ: 200 m. zero	-1.5"	2.5"	0.0"	-10.3"	-26.1"	-60.3"
TRAJ: 300 m. zero	-1.5"	5.9"	6.9"	0.0"	-12.8"	-43.0"
TRAJ: 385 m. zero	-1.5"	9.2"	13.6"	10.0"	0.0"	-26.3"
TRAJ: 500 m. zero	-1.5"	14.5"	24.1"	25.8"	20.3"	0.0"
VELOCITY (fps)	2700	2473	2261	2061	1901	1700
ENERGY (ft. lbs.)	2267	1902	1589	1321	1124	899
TRAJ: 100 m. zero	-1.5"	0.0"	-5.4"	-19.0"	-38.3"	-78.7"
TRAJ: 200 m. zero	-1.5"	2.7"	0.0"	-10.8"	-27.8"	-65.1"
TRAJ: 300 m. zero	-1.5"	6.4"	7.3"	0.0"	-13.8"	-46.9"
TRAJ: 385 m. zero	-1.5"	10.0"	14.5"	10.8"	0.0"	-28.9"
TRAJ: 500 m. zero	-1.5"	15.8"	26.1"	28.2"	22.3"	0.0"
VELOCITY (fps)	2600	2379	2172	1978	1823	1630
ENERGY (ft. lbs.)	2102	1760	1467	1217	1033	826
TRAJ: 100 m. zero	-1.5"	0.0"	-6.0"	-20.9"	-42.6"	-86.4"
TRAJ: 200 m. zero	-1.5"	3.0"	0.0"	-11.9"	-31.0"	-71.3"
TRAJ: 300 m. zero	-1.5"	7.0"	7.9"	0.0"	-15.7"	-51.4"
TRAJ: 385 m. zero	-1.5"	11.1"	16.1"	12.3"	0.0"	-31.0"
TRAJ: 500 m. zero	-1.5"	17.3"	28.5"	30.9"	23.9"	0.0"
VELOCITY (fps)	2500	2285	2084	1896	1746	1561
ENERGY (ft. lbs.)	1943	1624	1351	1117	947	757
TRAJ: 100 m. zero	-1.5"	0.0"	-6.7"	-23.1"	-46.9"	-94.2"
TRAJ: 200 m. zero	-1.5"	3.4"	0.0"	-13.0"	-33.9"	-77.4"
TRAJ: 300 m. zero	-1.5"	7.7"	8.7"	0.0"	-17.1"	-55.6"
TRAJ: 385 m. zero	-1.5"	12.2"	17.6"	13.4"	0.0"	-33.3"
TRAJ: 500 m. zero	-1.5"	18.9"	31.0"	33.4"	25.7"	0.0"
VELOCITY (fps)	2400	2192	1996	1813	1669	1483
ENERGY (ft. lbs.)	1791	1493	1239	1023	867	684
TRAJ: 100 m. zero	-1.5"	0.0"	-7.5"	-25.6"	-51.0"	-103.0"
TRAJ: 200 m. zero	-1.5"	3.8"	0.0"	-14.4"	-36.5"	-84.1"
TRAJ: 300 m. zero	-1.5"	8.6"	9.6"	0.0"	-18.0"	-60.1"
TRAJ: 385 m. zero	-1.5"	13.3"	19.0"	14.1"	0.0"	-36.6"
TRAJ: 500 m. zero	-1.5"	20.6"	33.7"	36.1"	28.3"	0.0"
VELOCITY (fps)	2300	2098	1908	1732	1594	1416
ENERGY (ft. lbs.)	1645	1368	1133	933	791	623
TRAJ: 100 m. zero	-1.5"	0.0"	-8.0"	-28.1"	-56.2"	-113.5"
TRAJ: 200 m. zero	-1.5"	4.0"	0.0"	-16.0"	-40.7"	-93.4"
TRAJ: 300 m. zero	-1.5"	9.4"	10.7"	0.0"	-20.1"	-66.7"
TRAJ: 385 m. zero	-1.5"	14.6"	21.1"	15.7"	0.0"	-40.5"
TRAJ: 500 m. zero	-1.5"	22.7"	37.4"	40.0"	31.2"	0.0"
VELOCITY (fps)	2200	2004	1821	1652	1511	1342
ENERGY (ft. lbs.)	1505	1249	1031	848	710	560
TRAJ: 100 m. zero	-1.5"	0.0"	-9.0"	-30.9"	-61.6"	-124.9"
TRAJ: 200 m. zero	-1.5"	4.5"	0.0"	-17.2"	-44.1"	-102.1"
TRAJ: 300 m. zero	-1.5"	10.3"	11.5"	0.0"	-21.9"	-73.3"
TRAJ: 385 m. zero	-1.5"	16.0"	22.9"	17.1"	0.0"	-44.8"
TRAJ: 500 m. zero	-1.5"	25.0"	40.9"	44.0"	34.6"	0.0"



**270 Caliber (.277" Dia.) 130 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .374

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3200	2906	2628	2367	2161	1901
ENERGY (ft. lbs.)	2957	2439	1994	1618	1348	1044
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.5"	- 13.2"	- 27.4"	- 57.1"
TRAJ: 200 m. zero	- 1.5"	1.8"	0.0"	- 8.0"	- 20.7"	- 48.3"
TRAJ: 300 m. zero	- 1.5"	4.4"	5.3"	0.0"	- 10.4"	- 35.0"
TRAJ: 385 m. zero	- 1.5"	7.1"	10.8"	8.2"	0.0"	- 21.4"
TRAJ: 500 m. zero	- 1.5"	11.4"	19.3"	21.0"	16.5"	0.0"
VELOCITY (fps)	3100	2812	2539	2284	2083	1830
ENERGY (ft. lbs.)	2775	2282	1861	1507	1252	967
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.8"	- 14.2"	- 29.5"	- 61.6"
TRAJ: 200 m. zero	- 1.5"	1.9"	0.0"	- 8.4"	- 22.0"	- 51.9"
TRAJ: 300 m. zero	- 1.5"	4.7"	5.6"	0.0"	- 11.2"	- 37.8"
TRAJ: 385 m. zero	- 1.5"	7.7"	11.5"	8.8"	0.0"	- 23.2"
TRAJ: 500 m. zero	- 1.5"	12.3"	20.8"	22.7"	17.9"	0.0"
VELOCITY (fps)	3000	2717	2450	2202	2006	1760
ENERGY (ft. lbs.)	2599	2131	1733	1400	1161	894
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.2"	- 15.6"	- 32.2"	- 67.2"
TRAJ: 200 m. zero	- 1.5"	2.1"	0.0"	- 9.1"	- 23.9"	- 56.5"
TRAJ: 300 m. zero	- 1.5"	5.2"	6.1"	0.0"	- 12.1"	- 41.2"
TRAJ: 385 m. zero	- 1.5"	8.4"	12.4"	9.5"	0.0"	- 25.4"
TRAJ: 500 m. zero	- 1.5"	13.4"	22.6"	24.7"	19.6"	0.0"
VELOCITY (fps)	2900	2622	2362	2120	1929	1691
ENERGY (ft. lbs.)	2428	1985	1611	1298	1074	826
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.7"	- 17.1"	- 35.2"	- 72.8"
TRAJ: 200 m. zero	- 1.5"	2.4"	0.0"	- 10.0"	- 26.0"	- 60.9"
TRAJ: 300 m. zero	- 1.5"	5.7"	6.7"	0.0"	- 13.1"	- 44.2"
TRAJ: 385 m. zero	- 1.5"	9.1"	13.5"	10.3"	0.0"	- 27.1"
TRAJ: 500 m. zero	- 1.5"	14.6"	24.4"	26.5"	20.9"	0.0"
VELOCITY (fps)	2800	2528	2274	2039	1853	1624
ENERGY (ft. lbs.)	2264	1845	1494	1201	992	762
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.1"	- 18.6"	- 38.2"	- 78.7"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.9"	- 28.3"	- 65.9"
TRAJ: 300 m. zero	- 1.5"	6.2"	7.3"	0.0"	- 14.2"	- 47.6"
TRAJ: 385 m. zero	- 1.5"	9.9"	14.7"	11.1"	0.0"	- 29.0"
TRAJ: 500 m. zero	- 1.5"	15.7"	26.4"	28.6"	22.4"	0.0"
VELOCITY (fps)	2700	2434	2187	1959	1778	1558
ENERGY (ft. lbs.)	2105	1711	1382	1108	913	701
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.7"	- 20.2"	- 41.5"	- 85.3"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.6"	- 30.5"	- 71.0"
TRAJ: 300 m. zero	- 1.5"	6.7"	7.8"	0.0"	- 15.5"	- 51.6"
TRAJ: 385 m. zero	- 1.5"	10.8"	15.9"	12.1"	0.0"	- 31.3"
TRAJ: 500 m. zero	- 1.5"	17.1"	28.4"	31.0"	24.2"	0.0"
VELOCITY (fps)	2600	2341	2101	1879	1705	1484
ENERGY (ft. lbs.)	1952	1583	1275	1019	839	636
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.3"	- 22.3"	- 45.1"	- 93.2"
TRAJ: 200 m. zero	- 1.5"	3.2"	0.0"	- 12.8"	- 32.8"	- 77.2"
TRAJ: 300 m. zero	- 1.5"	7.5"	8.5"	0.0"	- 16.4"	- 55.8"
TRAJ: 385 m. zero	- 1.5"	11.7"	17.1"	12.8"	0.0"	- 34.5"
TRAJ: 500 m. zero	- 1.5"	18.6"	30.9"	33.5"	26.6"	0.0"

**270 Caliber (.277" Dia.) 140 GRAIN BOAT TAIL SPIRE POINT**

SECTIONAL DENSITY: .261 BALLISTIC COEFFICIENT: .496

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3300	3072	2853	2643	2471	2252
ENERGY (ft. lbs.)	3386	2934	2531	2172	1899	1577
TRAJ: 100 m. zero	- 1.5"	0.0"	- 2.9"	- 10.9"	- 22.3"	- 45.8"
TRAJ: 200 m. zero	- 1.5"	1.5"	0.0"	- 6.5"	- 16.8"	- 38.5"
TRAJ: 300 m. zero	- 1.5"	3.6"	4.4"	0.0"	- 8.4"	- 27.6"
TRAJ: 385 m. zero	- 1.5"	5.8"	8.7"	6.5"	0.0"	- 16.7"
TRAJ: 500 m. zero	- 1.5"	9.2"	15.4"	16.6"	12.9"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3200	2976	2761	2554	2387	2173
ENERGY (ft. lbs.)	3184	2754	2370	2028	1772	1468
TRAJ: 100 m. zero	-1.5"	0.0"	-3.1"	-11.8"	-24.1"	-49.3"
TRAJ: 200 m. zero	-1.5"	1.6"	0.0"	-7.0"	-18.0"	-41.4"
TRAJ: 300 m. zero	-1.5"	4.0"	4.7"	0.0"	-8.9"	-29.6"
TRAJ: 385 m. zero	-1.5"	6.3"	9.4"	7.0"	0.0"	-17.9"
TRAJ: 500 m. zero	-1.5"	9.9"	16.6"	17.8"	13.9"	0.0"
VELOCITY (fps)	3100	2880	2669	2467	2303	2095
ENERGY (ft. lbs.)	2988	2579	2215	1892	1649	1365
TRAJ: 100 m. zero	-1.5"	0.0"	-3.5"	-12.8"	-26.1"	-53.2"
TRAJ: 200 m. zero	-1.5"	1.8"	0.0"	-7.5"	-19.4"	-44.4"
TRAJ: 300 m. zero	-1.5"	4.3"	5.1"	0.0"	-9.6"	-31.8"
TRAJ: 385 m. zero	-1.5"	6.8"	10.1"	7.5"	0.0"	-19.2"
TRAJ: 500 m. zero	-1.5"	10.6"	17.8"	19.1"	14.8"	0.0"
VELOCITY (fps)	3000	2784	2577	2380	2220	2017
ENERGY (ft. lbs.)	2799	2410	2065	1761	1532	1265
TRAJ: 100 m. zero	-1.5"	0.0"	-3.8"	-13.9"	-28.3"	-57.5"
TRAJ: 200 m. zero	-1.5"	1.9"	0.0"	-8.1"	-20.9"	-47.9"
TRAJ: 300 m. zero	-1.5"	4.7"	5.5"	0.0"	-10.4"	-34.2"
TRAJ: 385 m. zero	-1.5"	7.4"	10.9"	8.1"	0.0"	-20.7"
TRAJ: 500 m. zero	-1.5"	11.5"	19.2"	20.6"	16.0"	0.0"
VELOCITY (fps)	2900	2688	2485	2293	2138	1940
ENERGY (ft. lbs.)	2615	2247	1920	1635	1421	1170
TRAJ: 100 m. zero	-1.5"	0.0"	-4.2"	-15.2"	-30.7"	-62.3"
TRAJ: 200 m. zero	-1.5"	2.1"	0.0"	-8.8"	-22.5"	-51.6"
TRAJ: 300 m. zero	-1.5"	5.1"	5.9"	0.0"	-11.1"	-36.9"
TRAJ: 385 m. zero	-1.5"	8.0"	11.7"	8.7"	0.0"	-22.4"
TRAJ: 500 m. zero	-1.5"	12.5"	20.7"	22.1"	17.3"	0.0"
VELOCITY (fps)	2800	2592	2394	2207	2056	1864
ENERGY (ft. lbs.)	2438	2089	1782	1515	1314	1080
TRAJ: 100 m. zero	-1.5"	0.0"	-4.6"	-16.6"	-33.4"	-67.5"
TRAJ: 200 m. zero	-1.5"	2.3"	0.0"	-9.5"	-24.3"	-55.7"
TRAJ: 300 m. zero	-1.5"	5.5"	6.4"	0.0"	-12.0"	-39.8"
TRAJ: 385 m. zero	-1.5"	8.7"	12.7"	9.4"	0.0"	-24.1"
TRAJ: 500 m. zero	-1.5"	13.5"	22.3"	23.9"	18.6"	0.0"
VELOCITY (fps)	2700	2497	2304	2122	1975	1788
ENERGY (ft. lbs.)	2267	1939	1651	1400	1213	994
TRAJ: 100 m. zero	-1.5"	0.0"	-5.1"	-18.1"	-36.4"	-73.4"
TRAJ: 200 m. zero	-1.5"	2.6"	0.0"	-10.4"	-26.4"	-60.4"
TRAJ: 300 m. zero	-1.5"	6.1"	6.9"	0.0"	-13.0"	-43.1"
TRAJ: 385 m. zero	-1.5"	9.5"	13.7"	10.2"	0.0"	-26.1"
TRAJ: 500 m. zero	-1.5"	14.7"	24.2"	25.9"	20.1"	0.0"
VELOCITY (fps)	2600	2402	2215	2037	1895	1714
ENERGY (ft. lbs.)	2102	1794	1526	1290	1117	913
TRAJ: 100 m. zero	-1.5"	0.0"	-5.6"	-19.9"	-39.6"	-79.9"
TRAJ: 200 m. zero	-1.5"	2.8"	0.0"	-11.4"	-28.7"	-65.7"
TRAJ: 300 m. zero	-1.5"	6.6"	7.6"	0.0"	-14.1"	-46.7"
TRAJ: 385 m. zero	-1.5"	10.3"	14.9"	11.0"	0.0"	-28.4"
TRAJ: 500 m. zero	-1.5"	16.0"	26.3"	28.1"	21.9"	0.0"
VELOCITY (fps)	2500	2308	2125	1953	1815	1641
ENERGY (ft. lbs.)	1943	1656	1404	1186	1024	837
TRAJ: 100 m. zero	-1.5"	0.0"	-6.3"	-21.8"	-43.4"	-87.4"
TRAJ: 200 m. zero	-1.5"	3.2"	0.0"	-12.3"	-31.2"	-71.5"
TRAJ: 300 m. zero	-1.5"	7.3"	8.2"	0.0"	-15.3"	-50.9"
TRAJ: 385 m. zero	-1.5"	11.3"	16.2"	12.0"	0.0"	-31.0"
TRAJ: 500 m. zero	-1.5"	17.5"	28.6"	30.6"	23.9"	0.0"

**270 Caliber (.277" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .279 BALLISTIC COEFFICIENT: .443

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2760	2531	2316	2143	1924
ENERGY (ft. lbs.)	2998	2538	2134	1786	1530	1233
TRAJ: 100 m. zero	-1.5"	0.0"	-4.0"	-14.8"	-30.2"	-61.5"
TRAJ: 200 m. zero	-1.5"	2.0"	0.0"	-8.8"	-22.4"	-51.4"
TRAJ: 300 m. zero	-1.5"	5.0"	5.9"	0.0"	-11.1"	-36.7"
TRAJ: 385 m. zero	-1.5"	7.8"	11.7"	8.7"	0.0"	-22.3"
TRAJ: 500 m. zero	-1.5"	12.3"	20.6"	22.1"	17.2"	0.0"
VELOCITY (fps)	2900	2664	2441	2231	2063	1849
ENERGY (ft. lbs.)	2802	2365	1985	1658	1417	1140
TRAJ: 100 m. zero	-1.5"	0.0"	-4.4"	-16.2"	-32.8"	-66.8"
TRAJ: 200 m. zero	-1.5"	2.2"	0.0"	-9.5"	-24.2"	-55.7"
TRAJ: 300 m. zero	-1.5"	5.4"	6.4"	0.0"	-11.9"	-39.7"
TRAJ: 385 m. zero	-1.5"	8.5"	12.6"	9.3"	0.0"	-24.2"
TRAJ: 500 m. zero	-1.5"	13.4"	22.3"	23.9"	18.7"	0.0"
VELOCITY (fps)	2800	2569	2351	2147	1983	1776
ENERGY (ft. lbs.)	2612	2199	1842	1535	1310	1051
TRAJ: 100 m. zero	-1.5"	0.0"	-4.9"	-17.4"	-35.2"	-72.2"
TRAJ: 200 m. zero	-1.5"	2.5"	0.0"	-10.0"	-25.7"	-59.8"
TRAJ: 300 m. zero	-1.5"	5.8"	6.7"	0.0"	-12.8"	-43.1"
TRAJ: 385 m. zero	-1.5"	9.2"	13.4"	10.0"	0.0"	-26.4"
TRAJ: 500 m. zero	-1.5"	14.4"	23.9"	25.9"	20.3"	0.0"
VELOCITY (fps)	2700	2474	2262	2063	1904	1704
ENERGY (ft. lbs.)	2429	2040	1705	1418	1208	967
TRAJ: 100 m. zero	-1.5"	0.0"	-5.4"	-19.1"	-38.5"	-79.0"
TRAJ: 200 m. zero	-1.5"	2.7"	0.0"	-10.9"	-27.9"	-65.3"
TRAJ: 300 m. zero	-1.5"	6.4"	7.3"	0.0"	-13.9"	-47.1"
TRAJ: 385 m. zero	-1.5"	10.0"	14.5"	10.8"	0.0"	-29.0"
TRAJ: 500 m. zero	-1.5"	15.8"	26.1"	28.3"	22.4"	0.0"
VELOCITY (fps)	2600	2380	2174	1981	1826	1633
ENERGY (ft. lbs.)	2252	1888	1575	1307	1111	889
TRAJ: 100 m. zero	-1.5"	0.0"	-6.0"	-21.0"	-42.1"	-85.7"
TRAJ: 200 m. zero	-1.5"	3.0"	0.0"	-11.9"	-30.4"	-70.5"
TRAJ: 300 m. zero	-1.5"	7.0"	8.0"	0.0"	-15.0"	-50.8"
TRAJ: 385 m. zero	-1.5"	10.9"	15.8"	11.7"	0.0"	-31.0"
TRAJ: 500 m. zero	-1.5"	17.2"	28.2"	30.4"	23.9"	0.0"
VELOCITY (fps)	2500	2286	2086	1898	1749	1564
ENERGY (ft. lbs.)	2082	1742	1450	1200	1019	815
TRAJ: 100 m. zero	-1.5"	0.0"	-6.7"	-23.2"	-46.3"	-93.5"
TRAJ: 200 m. zero	-1.5"	3.4"	0.0"	-13.1"	-33.2"	-76.5"
TRAJ: 300 m. zero	-1.5"	7.8"	8.8"	0.0"	-16.4"	-54.7"
TRAJ: 385 m. zero	-1.5"	12.0"	17.3"	12.8"	0.0"	-33.3"
TRAJ: 500 m. zero	-1.5"	18.7"	30.6"	32.8"	25.7"	0.0"

**7 MM (.284" Dia.) 154 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .273 BALLISTIC COEFFICIENT: .423

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3100	2844	2600	2371	2187	1955
ENERGY (ft. lbs.)	3287	2767	2313	1922	1636	1307
TRAJ: 100 m. zero	-1.5"	0.0"	-3.7"	-13.6"	-27.9"	-57.7"
TRAJ: 200 m. zero	-1.5"	1.9"	0.0"	-8.0"	-20.7"	-48.4"
TRAJ: 300 m. zero	-1.5"	4.5"	5.4"	0.0"	-10.4"	-35.0"
TRAJ: 385 m. zero	-1.5"	7.3"	10.8"	8.1"	0.0"	-21.5"
TRAJ: 500 m. zero	-1.5"	11.6"	19.4"	21.0"	16.8"	0.0"
VELOCITY (fps)	3000	2749	2510	2286	2107	1881
ENERGY (ft. lbs.)	3078	2584	2155	1788	1519	1210
TRAJ: 100 m. zero	-1.5"	0.0"	-4.0"	-14.8"	-30.3"	-62.6"
TRAJ: 200 m. zero	-1.5"	2.0"	0.0"	-8.7"	-22.4"	-52.4"
TRAJ: 300 m. zero	-1.5"	5.0"	5.8"	0.0"	-11.2"	-37.9"
TRAJ: 385 m. zero	-1.5"	7.9"	11.7"	8.8"	0.0"	-23.3"
TRAJ: 500 m. zero	-1.5"	12.5"	21.0"	22.8"	18.0"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2654	2420	2202	2028	1808
ENERGY (ft. lbs.)	2877	2408	2004	1659	1406	1118
TRAJ: 100 m. zero	-1.5"	0.0"	-4.5"	-16.2"	-32.9"	-68.2"
TRAJ: 200 m. zero	-1.5"	2.3"	0.0"	-9.4"	-24.2"	-56.9"
TRAJ: 300 m. zero	-1.5"	5.4"	6.3"	0.0"	-12.0"	-41.1"
TRAJ: 385 m. zero	-1.5"	8.8"	12.6"	9.4"	0.0"	-25.4"
TRAJ: 500 m. zero	-1.5"	13.6"	22.8"	24.7"	19.6"	0.0"
VELOCITY (fps)	2800	2559	2331	2119	1949	1736
ENERGY (ft. lbs.)	2682	2239	1859	1536	1300	1030
TRAJ: 100 m. zero	-1.5"	0.0"	-5.0"	-17.8"	-35.9"	-73.6"
TRAJ: 200 m. zero	-1.5"	2.5"	0.0"	-10.3"	-26.3"	-61.0"
TRAJ: 300 m. zero	-1.5"	6.0"	6.9"	0.0"	-13.0"	-43.8"
TRAJ: 385 m. zero	-1.5"	9.3"	13.7"	10.2"	0.0"	-26.9"
TRAJ: 500 m. zero	-1.5"	14.7"	24.4"	26.3"	20.7"	0.0"
VELOCITY (fps)	2700	2484	2243	2036	1871	1665
ENERGY (ft. lbs.)	2493	2077	1721	1418	1198	949
TRAJ: 100 m. zero	-1.5"	0.0"	-5.5"	-19.6"	-39.3"	-80.8"
TRAJ: 200 m. zero	-1.5"	2.8"	0.0"	-11.2"	-28.6"	-66.9"
TRAJ: 300 m. zero	-1.5"	6.6"	7.5"	0.0"	-14.1"	-48.0"
TRAJ: 385 m. zero	-1.5"	10.2"	14.9"	11.0"	0.0"	-29.7"
TRAJ: 500 m. zero	-1.5"	16.2"	26.8"	28.8"	22.9"	0.0"
VELOCITY (fps)	2600	2370	2155	1954	1794	1596
ENERGY (ft. lbs.)	2312	1922	1589	1306	1101	872
TRAJ: 100 m. zero	-1.5"	0.0"	-6.2"	-21.6"	-43.8"	-88.9"
TRAJ: 200 m. zero	-1.5"	3.1"	0.0"	-12.3"	-31.9"	-73.4"
TRAJ: 300 m. zero	-1.5"	7.2"	8.2"	0.0"	-16.0"	-52.7"
TRAJ: 385 m. zero	-1.5"	11.4"	16.6"	12.5"	0.0"	-31.9"
TRAJ: 500 m. zero	-1.5"	17.8"	29.4"	31.7"	24.6"	0.0"
VELOCITY (fps)	2500	2277	2068	1873	1718	1529
ENERGY (ft. lbs.)	2138	1773	1462	1199	1009	799
TRAJ: 100 m. zero	-1.5"	0.0"	-6.6"	-23.5"	-47.0"	-95.4"
TRAJ: 200 m. zero	-1.5"	3.3"	0.0"	-13.6"	-34.2"	-78.8"
TRAJ: 300 m. zero	-1.5"	7.9"	9.1"	0.0"	-16.7"	-56.1"
TRAJ: 385 m. zero	-1.5"	12.2"	17.8"	13.1"	0.0"	-34.3"
TRAJ: 500 m. zero	-1.5"	19.1"	31.5"	33.7"	26.5"	0.0"
VELOCITY (fps)	2400	2183	1980	1791	1643	1452
ENERGY (ft. lbs.)	1970	1630	1341	1097	923	721
TRAJ: 100 m. zero	-1.5"	0.0"	-7.4"	-25.6"	-51.4"	-104.8"
TRAJ: 200 m. zero	-1.5"	3.7"	0.0"	-14.4"	-37.1"	-86.2"
TRAJ: 300 m. zero	-1.5"	8.5"	9.6"	0.0"	-18.6"	-62.1"
TRAJ: 385 m. zero	-1.5"	13.4"	19.3"	14.5"	0.0"	-37.9"
TRAJ: 500 m. zero	-1.5"	21.0"	34.5"	37.3"	29.2"	0.0"
VELOCITY (fps)	2300	2089	1893	1711	1569	1387
ENERGY (ft. lbs.)	1809	1493	1226	1001	842	658
TRAJ: 100 m. zero	-1.5"	0.0"	-8.3"	-28.6"	-57.6"	-115.9"
TRAJ: 200 m. zero	-1.5"	4.2"	0.0"	-16.1"	-41.5"	-95.0"
TRAJ: 300 m. zero	-1.5"	9.8"	10.8"	0.0"	-20.8"	-68.1"
TRAJ: 385 m. zero	-1.5"	15.0"	21.6"	16.2"	0.0"	-41.1"
TRAJ: 500 m. zero	-1.5"	23.2"	38.0"	40.9"	31.7"	0.0"

**7 MM (.284" Dia.) 162 GRAIN BOAT TAIL HOLLOW POINT MATCH**

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .560

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2809	2625	2449	2306	2122
ENERGY (ft. lbs.)	3238	2839	2480	2158	1913	1620
TRAJ: 100 m. zero	-1.5"	0.0"	-3.8"	-14.0"	-28.1"	-56.3"
TRAJ: 200 m. zero	-1.5"	1.9"	0.0"	-8.2"	-20.7"	-46.7"
TRAJ: 300 m. zero	-1.5"	4.7"	5.5"	0.0"	-10.1"	-33.0"
TRAJ: 385 m. zero	-1.5"	7.3"	10.8"	7.9"	0.0"	-19.8"
TRAJ: 500 m. zero	-1.5"	11.3"	18.7"	19.8"	15.3"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2713	2533	2361	2222	2042
ENERGY (ft. lbs.)	3026	2648	2308	2006	1776	1501
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.4"	- 15.4"	- 30.6"	- 61.1"
TRAJ: 200 m. zero	- 1.5"	2.2"	0.0"	- 8.8"	- 22.2"	- 50.1"
TRAJ: 300 m. zero	- 1.5"	5.2"	5.9"	0.0"	- 10.8"	- 35.3"
TRAJ: 385 m. zero	- 1.5"	8.0"	11.5"	8.4"	0.0"	- 21.3"
TRAJ: 500 m. zero	- 1.5"	12.2"	20.1"	21.2"	16.4"	0.0"
VELOCITY (fps)	2800	2616	2441	2273	2138	1963
ENERGY (ft. lbs.)	2821	2463	2143	1860	1644	1387
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.8"	- 16.8"	- 33.7"	- 66.8"
TRAJ: 200 m. zero	- 1.5"	2.4"	0.0"	- 9.5"	- 24.4"	- 54.7"
TRAJ: 300 m. zero	- 1.5"	5.6"	6.4"	0.0"	- 12.1"	- 38.8"
TRAJ: 385 m. zero	- 1.5"	8.8"	12.7"	9.5"	0.0"	- 23.0"
TRAJ: 500 m. zero	- 1.5"	13.4"	21.9"	23.3"	17.7"	0.0"
VELOCITY (fps)	2700	2520	2349	2187	2055	1885
ENERGY (ft. lbs.)	2623	2286	1986	1720	1519	1279
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.2"	- 18.2"	- 36.4"	- 72.2"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.3"	- 26.2"	- 59.0"
TRAJ: 300 m. zero	- 1.5"	6.1"	6.9"	0.0"	- 12.9"	- 41.7"
TRAJ: 385 m. zero	- 1.5"	9.5"	13.6"	10.1"	0.0"	- 24.9"
TRAJ: 500 m. zero	- 1.5"	14.4"	23.6"	25.1"	19.2"	0.0"
VELOCITY (fps)	2600	2425	2259	2100	1972	1807
ENERGY (ft. lbs.)	2432	2116	1836	1587	1399	1175
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.8"	- 19.9"	- 39.4"	- 78.3"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.1"	- 28.2"	- 63.7"
TRAJ: 300 m. zero	- 1.5"	6.6"	7.5"	0.0"	- 13.9"	- 45.0"
TRAJ: 385 m. zero	- 1.5"	10.3"	14.7"	10.8"	0.0"	- 27.0"
TRAJ: 500 m. zero	- 1.5"	15.7"	25.5"	27.0"	20.8"	0.0"
VELOCITY (fps)	2500	2330	2168	2014	1890	1731
ENERGY (ft. lbs.)	2249	1953	1691	1460	1285	1078
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.4"	- 21.8"	- 42.9"	- 85.3"
TRAJ: 200 m. zero	- 1.5"	3.2"	0.0"	- 12.1"	- 30.5"	- 69.2"
TRAJ: 300 m. zero	- 1.5"	7.3"	8.1"	0.0"	- 14.9"	- 48.9"
TRAJ: 385 m. zero	- 1.5"	11.2"	15.9"	11.6"	0.0"	- 29.5"
TRAJ: 500 m. zero	- 1.5"	17.1"	27.7"	29.4"	22.8"	0.0"
VELOCITY (fps)	2400	2235	2078	1929	1808	1655
ENERGY (ft. lbs.)	2072	1797	1553	1338	1176	986
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.1"	- 23.9"	- 47.7"	- 94.8"
TRAJ: 200 m. zero	- 1.5"	3.6"	0.0"	- 13.2"	- 34.0"	- 77.0"
TRAJ: 300 m. zero	- 1.5"	8.0"	8.8"	0.0"	- 17.0"	- 54.9"
TRAJ: 385 m. zero	- 1.5"	12.4"	17.7"	13.3"	0.0"	- 32.8"
TRAJ: 500 m. zero	- 1.5"	19.0"	30.8"	33.0"	25.3"	0.0"
VELOCITY (fps)	2300	2140	1987	1843	1727	1581
ENERGY (ft. lbs.)	1903	1647	1421	1222	1073	899
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.8"	- 26.3"	- 52.4"	- 104.7"
TRAJ: 200 m. zero	- 1.5"	3.9"	0.0"	- 14.5"	- 37.2"	- 85.0"
TRAJ: 300 m. zero	- 1.5"	8.8"	9.7"	0.0"	- 18.6"	- 60.8"
TRAJ: 385 m. zero	- 1.5"	13.6"	19.4"	14.5"	0.0"	- 36.6"
TRAJ: 500 m. zero	- 1.5"	20.9"	34.0"	36.5"	28.2"	0.0"

**7 MM (.284" Dia.) 162 GRAIN BOAT TAIL SPIRE POINT**

**SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .520**

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2794	2595	2406	2253	2057
ENERGY (ft. lbs.)	3238	2809	2423	2083	1826	1522
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.8"	- 13.8"	- 27.9"	- 56.5"
TRAJ: 200 m. zero	- 1.5"	1.9"	0.0"	- 8.0"	- 20.5"	- 46.8"
TRAJ: 300 m. zero	- 1.5"	4.6"	5.4"	0.0"	- 10.1"	- 33.4"
TRAJ: 385 m. zero	- 1.5"	7.3"	10.7"	7.9"	0.0"	- 20.2"
TRAJ: 500 m. zero	- 1.5"	11.3"	18.8"	20.1"	15.6"	0.0"

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2698	2503	2319	2170	1979
ENERGY (ft. lbs.)	3026	2619	2254	1935	1694	1409
TRAJ: 100 m. zero	-1.5"	0.0"	-4.2"	-15.0"	-30.2"	-61.1"
TRAJ: 200 m. zero	-1.5"	2.1"	0.0"	-8.7"	-22.1"	-50.5"
TRAJ: 300 m. zero	-1.5"	5.0"	5.8"	0.0"	-10.9"	-36.0"
TRAJ: 385 m. zero	-1.5"	7.9"	11.5"	8.5"	0.0"	-21.8"
TRAJ: 500 m. zero	-1.5"	12.2"	20.2"	21.6"	16.8"	0.0"
VELOCITY (fps)	2800	2602	2412	2232	2087	1901
ENERGY (ft. lbs.)	2821	2436	2093	1793	1567	1300
TRAJ: 100 m. zero	-1.5"	0.0"	-4.6"	-16.4"	-32.9"	-66.4"
TRAJ: 200 m. zero	-1.5"	2.3"	0.0"	-9.4"	-23.9"	-54.8"
TRAJ: 300 m. zero	-1.5"	5.5"	6.3"	0.0"	-11.8"	-39.0"
TRAJ: 385 m. zero	-1.5"	8.6"	12.5"	9.2"	0.0"	-23.6"
TRAJ: 500 m. zero	-1.5"	13.3"	21.9"	23.4"	18.2"	0.0"
VELOCITY (fps)	2700	2506	2321	2146	2005	1824
ENERGY (ft. lbs.)	2623	2260	1938	1657	1446	1197
TRAJ: 100 m. zero	-1.5"	0.0"	-5.1"	-17.9"	-35.8"	-72.2"
TRAJ: 200 m. zero	-1.5"	2.6"	0.0"	-10.2"	-25.9"	-59.4"
TRAJ: 300 m. zero	-1.5"	6.0"	6.9"	0.0"	-12.7"	-42.2"
TRAJ: 385 m. zero	-1.5"	9.3"	13.5"	10.0"	0.0"	-25.6"
TRAJ: 500 m. zero	-1.5"	14.5"	23.8"	25.4"	19.8"	0.0"
VELOCITY (fps)	2600	2411	2231	2061	1924	1749
ENERGY (ft. lbs.)	2432	2092	1791	1528	1332	1101
TRAJ: 100 m. zero	-1.5"	0.0"	-5.6"	-19.6"	-39.1"	-78.5"
TRAJ: 200 m. zero	-1.5"	2.8"	0.0"	-11.1"	-28.1"	-64.3"
TRAJ: 300 m. zero	-1.5"	6.6"	7.4"	0.0"	-13.8"	-45.7"
TRAJ: 385 m. zero	-1.5"	10.2"	14.6"	10.8"	0.0"	-27.7"
TRAJ: 500 m. zero	-1.5"	15.7"	25.7"	27.4"	21.3"	0.0"
VELOCITY (fps)	2500	2316	2142	1976	1843	1674
ENERGY (ft. lbs.)	2249	1930	1651	1405	1222	1008
TRAJ: 100 m. zero	-1.5"	0.0"	-6.2"	-21.5"	-42.8"	-85.9"
TRAJ: 200 m. zero	-1.5"	3.1"	0.0"	-12.2"	-30.8"	-70.3"
TRAJ: 300 m. zero	-1.5"	7.2"	8.2"	0.0"	-15.1"	-49.9"
TRAJ: 385 m. zero	-1.5"	11.1"	16.0"	11.8"	0.0"	-30.3"
TRAJ: 500 m. zero	-1.5"	17.2"	28.1"	30.0"	23.3"	0.0"
VELOCITY (fps)	2400	2221	2052	1891	1762	1601
ENERGY (ft. lbs.)	2072	1775	1515	1287	1117	922
TRAJ: 100 m. zero	-1.5"	0.0"	-6.8"	-23.7"	-47.0"	-93.9"
TRAJ: 200 m. zero	-1.5"	3.4"	0.0"	-13.4"	-33.7"	-76.7"
TRAJ: 300 m. zero	-1.5"	7.9"	8.9"	0.0"	-16.5"	-54.3"
TRAJ: 385 m. zero	-1.5"	12.2"	17.5"	12.9"	0.0"	-32.9"
TRAJ: 500 m. zero	-1.5"	18.8"	30.7"	32.6"	25.3"	0.0"
VELOCITY (fps)	2300	2127	1962	1807	1683	1528
ENERGY (ft. lbs.)	1903	1628	1385	1175	1019	840
TRAJ: 100 m. zero	-1.5"	0.0"	-7.7"	-26.1"	-51.7"	-103.6"
TRAJ: 200 m. zero	-1.5"	3.9"	0.0"	-14.5"	-36.8"	-84.3"
TRAJ: 300 m. zero	-1.5"	8.7"	9.7"	0.0"	-18.1"	-60.0"
TRAJ: 385 m. zero	-1.5"	13.5"	19.2"	14.2"	0.0"	-36.4"
TRAJ: 500 m. zero	-1.5"	20.7"	33.7"	36.0"	28.0"	0.0"

### 7 MM (.284" Dia.) 175 GRAIN SPIRE POINT

SECTIONAL DENSITY: .310 BALLISTIC COEFFICIENT: .506

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2693	2495	2308	2156	1963
ENERGY (ft. lbs.)	3269	2819	2420	2070	1807	1497
TRAJ: 100 m. zero	-1.5"	0.0"	-4.3"	-15.5"	-31.5"	-63.4"
TRAJ: 200 m. zero	-1.5"	2.2"	0.0"	-9.0"	-23.1"	-52.5"
TRAJ: 300 m. zero	-1.5"	5.2"	6.0"	0.0"	-11.5"	-37.4"
TRAJ: 385 m. zero	-1.5"	8.2"	12.0"	9.0"	0.0"	-22.5"
TRAJ: 500 m. zero	-1.5"	12.7"	21.0"	22.5"	17.3"	0.0"

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2800	2597	2404	2222	2074	1886
ENERGY (ft. lbs.)	3047	2622	2247	1918	1672	1383
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.7"	- 16.9"	- 34.1"	- 68.7"
TRAJ: 200 m. zero	- 1.5"	2.4"	0.0"	- 9.7"	- 24.9"	- 56.7"
TRAJ: 300 m. zero	- 1.5"	5.7"	6.5"	0.0"	- 12.3"	- 40.4"
TRAJ: 385 m. zero	- 1.5"	8.9"	12.9"	9.6"	0.0"	- 24.3"
TRAJ: 500 m. zero	- 1.5"	13.7"	22.7"	24.3"	18.8"	0.0"
VELOCITY (fps)	2700	2502	2314	2136	1993	1810
ENERGY (ft. lbs.)	2833	2433	2081	1774	1544	1273
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.2"	- 18.5"	- 37.0"	- 74.6"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.6"	- 26.8"	- 61.4"
TRAJ: 300 m. zero	- 1.5"	6.2"	7.1"	0.0"	- 13.2"	- 43.7"
TRAJ: 385 m. zero	- 1.5"	9.6"	14.0"	10.3"	0.0"	- 26.4"
TRAJ: 500 m. zero	- 1.5"	14.9"	24.6"	26.2"	20.4"	0.0"
VELOCITY (fps)	2600	2407	2224	2051	1912	1735
ENERGY (ft. lbs.)	2627	2252	1923	1636	1421	1170
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.8"	- 20.3"	- 40.3"	- 81.4"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.5"	- 29.0"	- 66.7"
TRAJ: 300 m. zero	- 1.5"	6.8"	7.7"	0.0"	- 14.2"	- 47.5"
TRAJ: 385 m. zero	- 1.5"	10.5"	15.1"	11.1"	0.0"	- 28.9"
TRAJ: 500 m. zero	- 1.5"	16.3"	26.7"	28.5"	22.3"	0.0"
VELOCITY (fps)	2500	2312	2135	1967	1832	1661
ENERGY (ft. lbs.)	2429	2078	1771	1504	1304	1073
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.4"	- 22.3"	- 44.8"	- 90.4"
TRAJ: 200 m. zero	- 1.5"	3.2"	0.0"	- 12.6"	- 32.4"	- 74.2"
TRAJ: 300 m. zero	- 1.5"	7.4"	8.4"	0.0"	- 16.2"	- 53.2"
TRAJ: 385 m. zero	- 1.5"	11.7"	16.8"	12.7"	0.0"	- 32.1"
TRAJ: 500 m. zero	- 1.5"	18.1"	29.7"	31.9"	24.7"	0.0"
VELOCITY (fps)	2400	2218	2045	1882	1752	1589
ENERGY (ft. lbs.)	2239	1911	1626	1377	1193	981
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.2"	- 24.6"	- 49.2"	- 98.3"
TRAJ: 200 m. zero	- 1.5"	3.6"	0.0"	- 13.8"	- 35.4"	- 80.3"
TRAJ: 300 m. zero	- 1.5"	8.2"	9.2"	0.0"	- 17.6"	- 57.3"
TRAJ: 385 m. zero	- 1.5"	12.8"	18.4"	13.8"	0.0"	- 34.3"
TRAJ: 500 m. zero	- 1.5"	19.7"	32.1"	34.4"	26.5"	0.0"
VELOCITY (fps)	2300	2123	1956	1798	1673	1508
ENERGY (ft. lbs.)	2056	1752	1487	1257	1088	883
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.0"	- 27.2"	- 54.5"	- 108.4"
TRAJ: 200 m. zero	- 1.5"	4.0"	0.0"	- 15.1"	- 39.0"	- 88.3"
TRAJ: 300 m. zero	- 1.5"	9.1"	10.1"	0.0"	- 19.5"	- 63.0"
TRAJ: 385 m. zero	- 1.5"	14.2"	20.3"	15.2"	0.0"	- 37.6"
TRAJ: 500 m. zero	- 1.5"	21.7"	35.4"	37.8"	29.0"	0.0"
VELOCITY (fps)	2200	2029	1867	1715	1596	1438
ENERGY (ft. lbs.)	1881	1599	1354	1143	990	830
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.9"	- 30.3"	- 59.5"	- 118.8"
TRAJ: 200 m. zero	- 1.5"	4.5"	0.0"	- 16.9"	- 42.2"	- 96.3"
TRAJ: 300 m. zero	- 1.5"	10.1"	11.3"	0.0"	- 20.5"	- 68.1"
TRAJ: 385 m. zero	- 1.5"	15.5"	21.9"	16.0"	0.0"	- 41.4"
TRAJ: 500 m. zero	- 1.5"	23.8"	38.5"	40.9"	32.0"	0.0"

### 30 Caliber (.308" Dia.) 165 GRAIN SPIRE POINT

SECTIONAL DENSITY: .248 BALLISTIC COEFFICIENT: .400

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2735	2484	2249	2062	1827
ENERGY (ft. lbs.)	3298	2741	2261	1854	1558	1223
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.2"	- 15.2"	- 31.2"	- 64.9"
TRAJ: 200 m. zero	- 1.5"	2.1"	0.0"	- 8.8"	- 23.1"	- 54.3"
TRAJ: 300 m. zero	- 1.5"	5.1"	5.9"	0.0"	- 11.7"	- 39.6"
TRAJ: 385 m. zero	- 1.5"	8.1"	12.0"	9.1"	0.0"	- 24.3"
TRAJ: 500 m. zero	- 1.5"	13.0"	21.8"	23.8"	18.8"	0.0"



RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2640	2395	2166	1984	1756
ENERGY (ft. lbs.)	3082	2554	2101	1719	1443	1130
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.6"	- 16.6"	- 34.0"	- 70.0"
TRAJ: 200 m. zero	- 1.5"	2.3"	0.0"	- 9.6"	- 25.0"	- 58.3"
TRAJ: 300 m. zero	- 1.5"	5.6"	6.4"	0.0"	- 12.6"	- 42.2"
TRAJ: 385 m. zero	- 1.5"	8.9"	13.0"	9.9"	0.0"	- 25.7"
TRAJ: 500 m. zero	- 1.5"	14.0"	23.3"	25.3"	19.9"	0.0"
VELOCITY (fps)	2800	2545	2306	2084	1907	1686
ENERGY (ft. lbs.)	2873	2374	1949	1591	1332	1042
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.0"	- 18.0"	- 36.8"	- 76.2"
TRAJ: 200 m. zero	- 1.5"	2.5"	0.0"	- 10.5"	- 27.2"	- 63.7"
TRAJ: 300 m. zero	- 1.5"	6.0"	7.0"	0.0"	- 13.7"	- 46.1"
TRAJ: 385 m. zero	- 1.5"	9.6"	14.1"	10.7"	0.0"	- 28.3"
TRAJ: 500 m. zero	- 1.5"	15.3"	25.5"	27.7"	21.8"	0.0"
VELOCITY (fps)	2700	2451	2219	2002	1830	1617
ENERGY (ft. lbs.)	2672	2202	1804	1469	1227	959
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.5"	- 19.9"	- 40.4"	- 82.9"
TRAJ: 200 m. zero	- 1.5"	2.8"	0.0"	- 11.5"	- 29.6"	- 69.0"
TRAJ: 300 m. zero	- 1.5"	6.6"	7.7"	0.0"	- 14.8"	- 49.7"
TRAJ: 385 m. zero	- 1.5"	10.5"	15.4"	11.6"	0.0"	- 30.4"
TRAJ: 500 m. zero	- 1.5"	16.6"	27.6"	29.9"	23.5"	0.0"
VELOCITY (fps)	2600	2358	2131	1921	1754	1551
ENERGY (ft. lbs.)	2477	2037	1665	1352	1128	881
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.2"	- 22.0"	- 44.4"	- 90.6"
TRAJ: 200 m. zero	- 1.5"	3.1"	0.0"	- 12.6"	- 32.4"	- 75.0"
TRAJ: 300 m. zero	- 1.5"	7.3"	8.4"	0.0"	- 16.2"	- 53.9"
TRAJ: 385 m. zero	- 1.5"	11.6"	16.9"	12.7"	0.0"	- 32.8"
TRAJ: 500 m. zero	- 1.5"	18.1"	30.0"	32.4"	25.3"	0.0"
VELOCITY (fps)	2500	2264	2044	1840	1680	1475
ENERGY (ft. lbs.)	2290	1879	1532	1241	1034	797
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.6"	- 23.4"	- 48.0"	- 97.9"
TRAJ: 200 m. zero	- 1.5"	3.3"	0.0"	- 13.4"	- 35.1"	- 81.1"
TRAJ: 300 m. zero	- 1.5"	7.8"	9.0"	0.0"	- 17.9"	- 58.7"
TRAJ: 385 m. zero	- 1.5"	12.5"	18.3"	14.0"	0.0"	- 35.5"
TRAJ: 500 m. zero	- 1.5"	19.6"	32.5"	35.3"	27.3"	0.0"
VELOCITY (fps)	2400	2171	1958	1760	1606	1410
ENERGY (ft. lbs.)	2111	1727	1405	1135	946	729
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.5"	- 26.1"	- 52.6"	- 107.6"
TRAJ: 200 m. zero	- 1.5"	3.8"	0.0"	- 14.8"	- 38.1"	- 88.8"
TRAJ: 300 m. zero	- 1.5"	8.7"	9.9"	0.0"	- 19.0"	- 64.0"
TRAJ: 385 m. zero	- 1.5"	13.7"	19.8"	14.9"	0.0"	- 39.2"
TRAJ: 500 m. zero	- 1.5"	21.5"	35.5"	38.4"	30.2"	0.0"
VELOCITY (fps)	2300	2078	1871	1681	1534	1347
ENERGY (ft. lbs.)	1939	1582	1283	1035	863	665
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.4"	- 29.4"	- 59.0"	- 119.5"
TRAJ: 200 m. zero	- 1.5"	4.2"	0.0"	- 16.7"	- 42.8"	- 98.3"
TRAJ: 300 m. zero	- 1.5"	9.8"	11.2"	0.0"	- 21.3"	- 70.5"
TRAJ: 385 m. zero	- 1.5"	15.3"	22.2"	16.6"	0.0"	- 42.7"
TRAJ: 500 m. zero	- 1.5"	23.9"	39.4"	42.3"	32.9"	0.0"
VELOCITY (fps)	2200	1985	1785	1603	1454	1279
ENERGY (ft. lbs.)	1774	1444	1167	942	774	600
TRAJ: 100 m. zero	- 1.5"	0.0"	- 9.1"	- 31.9"	- 63.8"	- 130.4"
TRAJ: 200 m. zero	- 1.5"	4.6"	0.0"	- 18.2"	- 46.2"	- 107.5"
TRAJ: 300 m. zero	- 1.5"	10.7"	12.2"	0.0"	- 22.8"	- 77.1"
TRAJ: 385 m. zero	- 1.5"	16.6"	24.0"	17.8"	0.0"	- 47.5"
TRAJ: 500 m. zero	- 1.5"	26.1"	43.0"	46.3"	36.6"	0.0"

### 30 Caliber (.308" Dia.) 165 GRAIN BOAT TAIL SPIRE POINT

SECTIONAL DENSITY: .248 BALLISTIC COEFFICIENT: .459

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2769	2547	2337	2169	1956
ENERGY (ft. lbs.)	3298	2808	2377	2002	1725	1402
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.0"	- 14.6"	- 29.7"	- 60.5"
TRAJ: 200 m. zero	- 1.5"	2.0"	0.0"	- 8.4"	- 21.8"	- 50.3"
TRAJ: 300 m. zero	- 1.5"	4.9"	5.7"	0.0"	- 10.9"	- 36.1"
TRAJ: 385 m. zero	- 1.5"	7.7"	11.3"	8.5"	0.0"	- 21.9"
TRAJ: 500 m. zero	- 1.5"	12.1"	20.1"	21.7"	16.9"	0.0"
VELOCITY (fps)	2900	2672	2456	2252	2089	1881
ENERGY (ft. lbs.)	3082	2617	2211	1859	1599	1296
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.5"	- 15.9"	- 32.2"	- 65.6"
TRAJ: 200 m. zero	- 1.5"	2.3"	0.0"	- 9.2"	- 23.5"	- 54.3"
TRAJ: 300 m. zero	- 1.5"	5.3"	6.1"	0.0"	- 11.7"	- 39.0"
TRAJ: 385 m. zero	- 1.5"	8.4"	12.2"	9.1"	0.0"	- 23.7"
TRAJ: 500 m. zero	- 1.5"	13.1"	21.8"	23.4"	18.3"	0.0"
VELOCITY (fps)	2800	2577	2366	2168	2008	1806
ENERGY (ft. lbs.)	2873	2434	2052	1722	1478	1196
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.9"	- 17.4"	- 35.0"	- 71.4"
TRAJ: 200 m. zero	- 1.5"	2.5"	0.0"	- 10.0"	- 25.4"	- 58.9"
TRAJ: 300 m. zero	- 1.5"	5.8"	6.7"	0.0"	- 12.6"	- 42.2"
TRAJ: 385 m. zero	- 1.5"	9.1"	13.2"	9.8"	0.0"	- 25.8"
TRAJ: 500 m. zero	- 1.5"	14.3"	23.6"	25.4"	19.9"	0.0"
VELOCITY (fps)	2700	2482	2277	2084	1929	1733
ENERGY (ft. lbs.)	2672	2258	1900	1591	1363	1101
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.5"	- 19.1"	- 38.2"	- 77.9"
TRAJ: 200 m. zero	- 1.5"	2.8"	0.0"	- 10.8"	- 27.5"	- 64.1"
TRAJ: 300 m. zero	- 1.5"	6.4"	7.3"	0.0"	- 13.6"	- 46.0"
TRAJ: 385 m. zero	- 1.5"	9.9"	14.3"	10.6"	0.0"	- 28.3"
TRAJ: 500 m. zero	- 1.5"	15.6"	25.7"	27.6"	21.8"	0.0"
VELOCITY (fps)	2600	2388	2188	2000	1850	1661
ENERGY (ft. lbs.)	2477	2089	1754	1466	1254	1011
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.8"	- 20.6"	- 41.9"	- 84.6"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.8"	- 30.6"	- 70.0"
TRAJ: 300 m. zero	- 1.5"	6.9"	7.9"	0.0"	- 15.4"	- 50.2"
TRAJ: 385 m. zero	- 1.5"	10.9"	15.9"	12.0"	0.0"	- 30.2"
TRAJ: 500 m. zero	- 1.5"	16.9"	28.0"	30.1"	23.3"	0.0"
VELOCITY (fps)	2500	2294	2099	1917	1771	1591
ENERGY (ft. lbs.)	2290	1928	1615	1347	1150	927
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.5"	- 22.8"	- 46.0"	- 93.5"
TRAJ: 200 m. zero	- 1.5"	3.3"	0.0"	- 13.0"	- 33.4"	- 77.2"
TRAJ: 300 m. zero	- 1.5"	7.6"	8.7"	0.0"	- 16.7"	- 55.5"
TRAJ: 385 m. zero	- 1.5"	12.0"	17.4"	13.1"	0.0"	- 33.7"
TRAJ: 500 m. zero	- 1.5"	18.7"	30.9"	33.3"	26.0"	0.0"
VELOCITY (fps)	2400	2200	2011	1834	1694	1511
ENERGY (ft. lbs.)	2111	1773	1482	1233	1052	837
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.2"	- 25.2"	- 50.8"	- 102.3"
TRAJ: 200 m. zero	- 1.5"	3.6"	0.0"	- 14.3"	- 36.8"	- 84.1"
TRAJ: 300 m. zero	- 1.5"	8.4"	9.6"	0.0"	- 18.4"	- 60.3"
TRAJ: 385 m. zero	- 1.5"	13.2"	19.2"	14.4"	0.0"	- 36.2"
TRAJ: 500 m. zero	- 1.5"	20.5"	33.7"	36.2"	27.9"	0.0"
VELOCITY (fps)	2300	2105	1923	1752	1618	1443
ENERGY (ft. lbs.)	1939	1625	1355	1125	959	763
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.1"	- 28.0"	- 55.5"	- 111.2"
TRAJ: 200 m. zero	- 1.5"	4.1"	0.0"	- 15.8"	- 39.9"	- 90.9"
TRAJ: 300 m. zero	- 1.5"	9.4"	10.6"	0.0"	- 19.5"	- 64.4"
TRAJ: 385 m. zero	- 1.5"	14.4"	20.7"	15.2"	0.0"	- 39.1"
TRAJ: 500 m. zero	- 1.5"	22.3"	36.4"	38.7"	30.1"	0.0"
VELOCITY (fps)	2200	2012	1835	1671	1543	1376
ENERGY (ft. lbs.)	1774	1483	1234	1023	873	694
TRAJ: 100 m. zero	- 1.5"	0.0"	- 9.1"	- 30.7"	- 61.2"	- 122.8"
TRAJ: 200 m. zero	- 1.5"	4.6"	0.0"	- 17.0"	- 43.6"	- 99.9"
TRAJ: 300 m. zero	- 1.5"	10.3"	11.4"	0.0"	- 21.7"	- 71.5"
TRAJ: 385 m. zero	- 1.5"	15.9"	22.7"	17.0"	0.0"	- 43.2"
TRAJ: 500 m. zero	- 1.5"	24.6"	40.0"	42.9"	33.3"	0.0"

### 30 Caliber (.308" Dia.) 168 GRAIN BOAT TAIL HOLLOW POINT MATCH

SECTIONAL DENSITY: .253 BALLISTIC COEFFICIENT: .505

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	3000	2788	2584	2390	2233	2032
ENERGY (ft. lbs.)	3358	2900	2491	2131	1861	1541
TRAJ: 100 m. zero	- 1.5"	0.0"	- 3.8"	- 13.9"	- 28.1"	- 57.2"
TRAJ: 200 m. zero	- 1.5"	1.9"	0.0"	- 8.1"	- 20.7"	- 47.5"
TRAJ: 300 m. zero	- 1.5"	4.6"	5.4"	0.0"	- 10.2"	- 34.0"
TRAJ: 385 m. zero	- 1.5"	7.3"	10.8"	8.0"	0.0"	- 20.6"
TRAJ: 500 m. zero	- 1.5"	11.4"	19.0"	20.4"	15.9"	0.0"
VELOCITY (fps)	2900	2692	2492	2303	2150	1955
ENERGY (ft. lbs.)	3138	2704	2317	1979	1725	1426
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.2"	- 15.1"	- 30.5"	- 61.8"
TRAJ: 200 m. zero	- 1.5"	2.1"	0.0"	- 8.8"	- 22.4"	- 51.2"
TRAJ: 300 m. zero	- 1.5"	5.1"	5.9"	0.0"	- 11.1"	- 36.5"
TRAJ: 385 m. zero	- 1.5"	7.9"	11.6"	8.7"	0.0"	- 22.1"
TRAJ: 500 m. zero	- 1.5"	12.4"	20.5"	21.9"	17.1"	0.0"
VELOCITY (fps)	2800	2596	2401	2217	2068	1878
ENERGY (ft. lbs.)	2925	2515	2151	1834	1596	1316
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.6"	- 16.5"	- 33.2"	- 67.1"
TRAJ: 200 m. zero	- 1.5"	2.3"	0.0"	- 9.5"	- 24.2"	- 55.4"
TRAJ: 300 m. zero	- 1.5"	5.5"	6.3"	0.0"	- 12.0"	- 39.5"
TRAJ: 385 m. zero	- 1.5"	8.6"	12.6"	9.4"	0.0"	- 23.9"
TRAJ: 500 m. zero	- 1.5"	13.4"	22.2"	23.7"	18.5"	0.0"
VELOCITY (fps)	2700	2500	2311	2131	1987	1802
ENERGY (ft. lbs.)	2720	2332	1993	1694	1473	1212
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.1"	- 18.0"	- 36.1"	- 72.9"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.4"	- 26.2"	- 60.1"
TRAJ: 300 m. zero	- 1.5"	6.0"	6.9"	0.0"	- 12.8"	- 42.7"
TRAJ: 385 m. zero	- 1.5"	9.4"	13.6"	10.0"	0.0"	- 26.0"
TRAJ: 500 m. zero	- 1.5"	14.6"	24.1"	25.7"	20.1"	0.0"
VELOCITY (fps)	2600	2406	2221	2047	1906	1727
ENERGY (ft. lbs.)	2522	2160	1841	1564	1356	1113
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.7"	- 19.7"	- 39.5"	- 79.5"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.2"	- 28.5"	- 65.3"
TRAJ: 300 m. zero	- 1.5"	6.6"	7.5"	0.0"	- 14.1"	- 46.6"
TRAJ: 385 m. zero	- 1.5"	10.3"	14.8"	11.0"	0.0"	- 28.2"
TRAJ: 500 m. zero	- 1.5"	15.9"	26.1"	28.0"	21.7"	0.0"
VELOCITY (fps)	2500	2311	2131	1962	1825	1653
ENERGY (ft. lbs.)	2332	1993	1694	1436	1243	1020
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.3"	- 21.7"	- 43.3"	- 87.0"
TRAJ: 200 m. zero	- 1.5"	3.2"	0.0"	- 12.2"	- 31.1"	- 71.1"
TRAJ: 300 m. zero	- 1.5"	7.2"	8.2"	0.0"	- 15.4"	- 50.7"
TRAJ: 385 m. zero	- 1.5"	11.3"	16.2"	12.0"	0.0"	- 30.7"
TRAJ: 500 m. zero	- 1.5"	17.4"	28.5"	30.5"	23.7"	0.0"
VELOCITY (fps)	2400	2216	2042	1878	1745	1581
ENERGY (ft. lbs.)	2149	1832	1556	1316	1136	933
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.9"	- 23.8"	- 47.5"	- 95.1"
TRAJ: 200 m. zero	- 1.5"	3.5"	0.0"	- 13.3"	- 34.1"	- 77.7"
TRAJ: 300 m. zero	- 1.5"	7.9"	8.9"	0.0"	- 16.9"	- 55.4"
TRAJ: 385 m. zero	- 1.5"	12.3"	17.7"	13.2"	0.0"	- 33.4"
TRAJ: 500 m. zero	- 1.5"	19.0"	31.1"	33.3"	25.7"	0.0"
VELOCITY (fps)	2300	2122	1953	1793	1667	1510
ENERGY (ft. lbs.)	1974	1680	1423	1200	1037	851
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.7"	- 26.4"	- 52.2"	- 104.5"
TRAJ: 200 m. zero	- 1.5"	3.9"	0.0"	- 14.8"	- 37.3"	- 85.1"
TRAJ: 300 m. zero	- 1.5"	8.8"	9.9"	0.0"	- 18.2"	- 60.4"
TRAJ: 385 m. zero	- 1.5"	13.6"	19.4"	14.2"	0.0"	- 36.6"
TRAJ: 500 m. zero	- 1.5"	20.9"	34.1"	36.3"	28.3"	0.0"
VELOCITY (fps)	2200	2027	1864	1710	1589	1439
ENERGY (ft. lbs.)	1806	1533	1296	1091	942	773
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.5"	- 29.2"	- 57.7"	- 115.4"
TRAJ: 200 m. zero	- 1.5"	4.3"	0.0"	- 16.3"	- 41.2"	- 94.0"
TRAJ: 300 m. zero	- 1.5"	9.7"	10.9"	0.0"	- 20.2"	- 66.8"
TRAJ: 385 m. zero	- 1.5"	15.0"	21.4"	15.8"	0.0"	- 40.4"
TRAJ: 500 m. zero	- 1.5"	23.1"	37.6"	40.1"	31.2"	0.0"



**30 Caliber (.308" Dia.) 180 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .431

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2658	2429	2214	2042	1825
ENERGY (ft. lbs.)	3362	2825	2358	1960	1667	1331
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.4"	- 16.0"	- 32.7"	- 67.3"
TRAJ: 200 m. zero	- 1.5"	2.2"	0.0"	- 9.3"	- 24.1"	- 56.1"
TRAJ: 300 m. zero	- 1.5"	5.3"	6.2"	0.0"	- 12.2"	- 40.6"
TRAJ: 385 m. zero	- 1.5"	8.5"	12.6"	9.5"	0.0"	- 24.7"
TRAJ: 500 m. zero	- 1.5"	13.5"	22.5"	24.4"	19.1"	0.0"
VELOCITY (fps)	2800	2563	2340	2130	1963	1752
ENERGY (ft. lbs.)	3134	2626	2188	1814	1541	1227
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.9"	- 17.5"	- 35.7"	- 73.4"
TRAJ: 200 m. zero	- 1.5"	2.5"	0.0"	- 10.1"	- 26.2"	- 61.1"
TRAJ: 300 m. zero	- 1.5"	5.9"	6.8"	0.0"	- 13.2"	- 44.2"
TRAJ: 385 m. zero	- 1.5"	9.3"	13.6"	10.3"	0.0"	- 27.0"
TRAJ: 500 m. zero	- 1.5"	14.7"	24.5"	26.5"	20.8"	0.0"
VELOCITY (fps)	2700	2468	2251	2047	1885	1681
ENERGY (ft. lbs.)	2914	2436	2026	1676	1420	1130
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.4"	- 19.3"	- 39.0"	- 79.5"
TRAJ: 200 m. zero	- 1.5"	2.7"	0.0"	- 11.0"	- 28.4"	- 65.8"
TRAJ: 300 m. zero	- 1.5"	6.4"	7.4"	0.0"	- 14.2"	- 47.3"
TRAJ: 385 m. zero	- 1.5"	10.2"	14.8"	11.1"	0.0"	- 28.8"
TRAJ: 500 m. zero	- 1.5"	15.9"	26.3"	28.4"	22.2"	0.0"
VELOCITY (fps)	2600	2374	2163	1965	1807	1612
ENERGY (ft. lbs.)	2703	2254	1870	1544	1306	1038
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.1"	- 21.2"	- 42.8"	- 87.6"
TRAJ: 200 m. zero	- 1.5"	3.1"	0.0"	- 12.1"	- 31.0"	- 72.4"
TRAJ: 300 m. zero	- 1.5"	7.1"	8.1"	0.0"	- 15.4"	- 52.2"
TRAJ: 385 m. zero	- 1.5"	11.1"	16.1"	12.1"	0.0"	- 32.0"
TRAJ: 500 m. zero	- 1.5"	17.5"	29.0"	31.3"	24.7"	0.0"
VELOCITY (fps)	2500	2281	2075	1883	1730	1543
ENERGY (ft. lbs.)	2499	2079	1722	1418	1197	952
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.8"	- 23.5"	- 47.1"	- 95.7"
TRAJ: 200 m. zero	- 1.5"	3.4"	0.0"	- 13.3"	- 34.0"	- 78.7"
TRAJ: 300 m. zero	- 1.5"	7.8"	8.9"	0.0"	- 16.9"	- 56.5"
TRAJ: 385 m. zero	- 1.5"	12.3"	17.7"	13.2"	0.0"	- 34.5"
TRAJ: 500 m. zero	- 1.5"	19.2"	31.5"	33.9"	26.6"	0.0"
VELOCITY (fps)	2400	2187	1987	1801	1655	1466
ENERGY (ft. lbs.)	2303	1912	1579	1297	1095	859
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.3"	- 25.6"	- 51.6"	- 104.4"
TRAJ: 200 m. zero	- 1.5"	3.7"	0.0"	- 14.6"	- 37.6"	- 86.1"
TRAJ: 300 m. zero	- 1.5"	8.5"	9.8"	0.0"	- 18.7"	- 61.7"
TRAJ: 385 m. zero	- 1.5"	13.4"	19.6"	14.6"	0.0"	- 37.3"
TRAJ: 500 m. zero	- 1.5"	20.9"	34.5"	37.0"	28.7"	0.0"
VELOCITY (fps)	2300	2093	1900	1720	1581	1400
ENERGY (ft. lbs.)	2115	1752	1443	1183	999	784
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.1"	- 27.9"	- 55.8"	- 113.7"
TRAJ: 200 m. zero	- 1.5"	4.1"	0.0"	- 15.7"	- 40.0"	- 93.2"
TRAJ: 300 m. zero	- 1.5"	9.3"	10.5"	0.0"	- 19.9"	- 67.0"
TRAJ: 385 m. zero	- 1.5"	14.5"	20.8"	15.5"	0.0"	- 41.2"
TRAJ: 500 m. zero	- 1.5"	22.7"	37.3"	40.3"	31.7"	0.0"
VELOCITY (fps)	2200	2000	1813	1641	1498	1327
ENERGY (ft. lbs.)	1935	1599	1314	1076	897	704
TRAJ: 100 m. zero	- 1.5"	0.0"	- 9.2"	- 31.6"	- 62.8"	- 127.6"
TRAJ: 200 m. zero	- 1.5"	4.6"	0.0"	- 17.7"	- 45.1"	- 104.5"
TRAJ: 300 m. zero	- 1.5"	10.5"	11.8"	0.0"	- 22.3"	- 74.9"
TRAJ: 385 m. zero	- 1.5"	16.3"	23.4"	17.4"	0.0"	- 45.9"
TRAJ: 500 m. zero	- 1.5"	25.5"	41.8"	45.0"	35.4"	0.0"

**30 Caliber (.308" Dia.) 190 GRAIN BOAT TAIL HOLLOW POINT MATCH**

SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .552

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2710	2528	2354	2213	2031
ENERGY (ft. lbs.)	3549	3099	2696	2338	2066	1741
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.3"	- 15.1"	- 30.7"	- 61.8"
TRAJ: 200 m. zero	- 1.5"	2.2"	0.0"	- 8.7"	- 22.4"	- 51.1"
TRAJ: 300 m. zero	- 1.5"	5.1"	5.8"	0.0"	- 11.2"	- 36.5"
TRAJ: 385 m. zero	- 1.5"	8.0"	11.7"	8.8"	0.0"	- 21.9"
TRAJ: 500 m. zero	- 1.5"	12.4"	20.5"	21.9"	16.9"	0.0"
VELOCITY (fps)	2800	2614	2436	2266	2129	1953
ENERGY (ft. lbs.)	3308	2883	2504	2168	1913	1609
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.7"	- 16.4"	- 33.1"	- 66.8"
TRAJ: 200 m. zero	- 1.5"	2.4"	0.0"	- 9.4"	- 24.0"	- 55.0"
TRAJ: 300 m. zero	- 1.5"	5.5"	6.3"	0.0"	- 11.9"	- 39.3"
TRAJ: 385 m. zero	- 1.5"	8.6"	12.5"	9.3"	0.0"	- 23.7"
TRAJ: 500 m. zero	- 1.5"	13.4"	22.0"	23.6"	18.3"	0.0"
VELOCITY (fps)	2700	2518	2345	2180	2046	1875
ENERGY (ft. lbs.)	3076	2675	2320	2005	1767	1483
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.1"	- 17.9"	- 35.8"	- 72.3"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.1"	- 25.8"	- 59.3"
TRAJ: 300 m. zero	- 1.5"	6.0"	6.8"	0.0"	- 12.8"	- 42.3"
TRAJ: 385 m. zero	- 1.5"	9.3"	13.4"	10.0"	0.0"	- 25.7"
TRAJ: 500 m. zero	- 1.5"	14.5"	23.7"	25.4"	19.8"	0.0"
VELOCITY (fps)	2600	2423	2254	2094	1964	1797
ENERGY (ft. lbs.)	2853	2477	2144	1850	1628	1363
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.7"	- 20.1"	- 39.5"	- 79.3"
TRAJ: 200 m. zero	- 1.5"	2.9"	0.0"	- 11.5"	- 28.5"	- 65.0"
TRAJ: 300 m. zero	- 1.5"	6.7"	7.7"	0.0"	- 13.7"	- 45.8"
TRAJ: 385 m. zero	- 1.5"	10.3"	14.8"	10.7"	0.0"	- 27.9"
TRAJ: 500 m. zero	- 1.5"	15.9"	26.0"	27.5"	21.5"	0.0"
VELOCITY (fps)	2500	2327	2164	2008	1882	1721
ENERGY (ft. lbs.)	2637	2286	1975	1701	1494	1250
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.2"	- 22.0"	- 43.8"	- 87.6"
TRAJ: 200 m. zero	- 1.5"	3.1"	0.0"	- 12.5"	- 31.7"	- 71.9"
TRAJ: 300 m. zero	- 1.5"	7.3"	8.4"	0.0"	- 15.6"	- 51.0"
TRAJ: 385 m. zero	- 1.5"	11.4"	16.5"	12.2"	0.0"	- 30.7"
TRAJ: 500 m. zero	- 1.5"	17.5"	28.8"	30.6"	23.6"	0.0"
VELOCITY (fps)	2400	2232	2073	1922	1800	1646
ENERGY (ft. lbs.)	2431	2103	1814	1559	1367	1143
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.9"	- 24.1"	- 47.8"	- 94.7"
TRAJ: 200 m. zero	- 1.5"	3.5"	0.0"	- 13.7"	- 34.4"	- 77.3"
TRAJ: 300 m. zero	- 1.5"	8.1"	9.1"	0.0"	- 16.8"	- 54.4"
TRAJ: 385 m. zero	- 1.5"	12.4"	17.9"	13.1"	0.0"	- 32.5"
TRAJ: 500 m. zero	- 1.5"	18.9"	30.9"	32.7"	25.1"	0.0"
VELOCITY (fps)	2300	2137	1983	1837	1719	1572
ENERGY (ft. lbs.)	2232	1928	1660	1424	1247	1043
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.7"	- 26.6"	- 52.6"	- 104.7"
TRAJ: 200 m. zero	- 1.5"	3.9"	0.0"	- 15.0"	- 37.7"	- 85.3"
TRAJ: 300 m. zero	- 1.5"	8.9"	10.0"	0.0"	- 18.4"	- 60.3"
TRAJ: 385 m. zero	- 1.5"	13.7"	19.6"	14.4"	0.0"	- 36.3"
TRAJ: 500 m. zero	- 1.5"	20.9"	34.2"	36.2"	28.0"	0.0"
VELOCITY (fps)	2200	2042	1893	1752	1640	1490
ENERGY (ft. lbs.)	2042	1760	1512	1295	1135	936
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.5"	- 29.5"	- 58.2"	- 115.5"
TRAJ: 200 m. zero	- 1.5"	4.3"	0.0"	- 16.6"	- 41.7"	- 94.0"
TRAJ: 300 m. zero	- 1.5"	9.8"	11.1"	0.0"	- 20.4"	- 66.3"
TRAJ: 385 m. zero	- 1.5"	15.1"	21.7"	15.9"	0.0"	- 39.8"
TRAJ: 500 m. zero	- 1.5"	23.1"	37.6"	39.8"	30.7"	0.0"

**30 Caliber (.308" Dia.) 190 GRAIN BOAT TAIL SPIRE POINT**
**SECTIONAL DENSITY: .286 BALLISTIC COEFFICIENT: .515**

RANGE	MUZZLE	100 m.	200 m.	300 m.	385 m.	500 m.
VELOCITY (fps)	2900	2896	2500	2314	2163	1971
ENERGY (ft. lbs.)	3549	3067	2637	2280	1974	1639
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.2"	- 15.0"	- 30.4"	- 61.4"
TRAJ: 200 m. zero	- 1.5"	2.1"	0.0"	- 8.7"	- 22.3"	- 50.8"
TRAJ: 300 m. zero	- 1.5"	5.0"	5.8"	0.0"	- 11.0"	- 36.2"
TRAJ: 385 m. zero	- 1.5"	7.9"	11.8"	8.6"	0.0"	- 21.9"
TRAJ: 500 m. zero	- 1.5"	12.3"	20.3"	21.8"	16.9"	0.0"
VELOCITY (fps)	2800	2800	2409	2227	2081	1894
ENERGY (ft. lbs.)	3308	2853	2449	2093	1827	1514
TRAJ: 100 m. zero	- 1.5"	0.0"	- 4.6"	- 16.5"	- 33.0"	- 66.6"
TRAJ: 200 m. zero	- 1.5"	2.3"	0.0"	- 9.5"	- 24.0"	- 54.9"
TRAJ: 300 m. zero	- 1.5"	5.5"	6.4"	0.0"	- 11.8"	- 39.0"
TRAJ: 385 m. zero	- 1.5"	8.6"	12.5"	9.2"	0.0"	- 23.6"
TRAJ: 500 m. zero	- 1.5"	13.3"	22.0"	23.4"	18.2"	0.0"
VELOCITY (fps)	2700	2504	2318	2141	1999	1817
ENERGY (ft. lbs.)	3076	2646	2267	1934	1686	1393
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.1"	- 18.0"	- 35.9"	- 72.4"
TRAJ: 200 m. zero	- 1.5"	2.6"	0.0"	- 10.3"	- 26.1"	- 59.6"
TRAJ: 300 m. zero	- 1.5"	6.0"	6.9"	0.0"	- 12.8"	- 42.3"
TRAJ: 385 m. zero	- 1.5"	9.3"	13.6"	10.0"	0.0"	- 25.7"
TRAJ: 500 m. zero	- 1.5"	14.5"	23.9"	25.4"	19.8"	0.0"
VELOCITY (fps)	2600	2409	2228	2056	1918	1742
ENERGY (ft. lbs.)	2853	2449	2095	1784	1552	1281
TRAJ: 100 m. zero	- 1.5"	0.0"	- 5.6"	- 19.7"	- 39.2"	- 78.7"
TRAJ: 200 m. zero	- 1.5"	2.8"	0.0"	- 11.2"	- 28.3"	- 64.6"
TRAJ: 300 m. zero	- 1.5"	6.6"	7.5"	0.0"	- 13.9"	- 45.9"
TRAJ: 385 m. zero	- 1.5"	10.2"	14.7"	10.9"	0.0"	- 27.8"
TRAJ: 500 m. zero	- 1.5"	15.8"	25.9"	27.5"	21.4"	0.0"
VELOCITY (fps)	2500	2314	2138	1972	1837	1687
ENERGY (ft. lbs.)	2637	2260	1929	1641	1424	1173
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.2"	- 21.5"	- 42.9"	- 86.2"
TRAJ: 200 m. zero	- 1.5"	3.1"	0.0"	- 12.1"	- 30.9"	- 70.5"
TRAJ: 300 m. zero	- 1.5"	7.2"	8.1"	0.0"	- 15.3"	- 50.3"
TRAJ: 385 m. zero	- 1.5"	11.2"	16.1"	11.9"	0.0"	- 30.4"
TRAJ: 500 m. zero	- 1.5"	17.3"	28.2"	30.2"	23.5"	0.0"
VELOCITY (fps)	2400	2220	2049	1887	1757	1594
ENERGY (ft. lbs.)	2431	2080	1772	1503	1303	1072
TRAJ: 100 m. zero	- 1.5"	0.0"	- 6.9"	- 23.8"	- 47.1"	- 94.5"
TRAJ: 200 m. zero	- 1.5"	3.5"	0.0"	- 13.3"	- 33.7"	- 77.2"
TRAJ: 300 m. zero	- 1.5"	7.9"	8.9"	0.0"	- 16.6"	- 54.9"
TRAJ: 385 m. zero	- 1.5"	12.3"	17.6"	12.9"	0.0"	- 33.3"
TRAJ: 500 m. zero	- 1.5"	18.9"	30.9"	33.0"	25.7"	0.0"
VELOCITY (fps)	2300	2125	1959	1802	1677	1522
ENERGY (ft. lbs.)	2232	1906	1619	1370	1187	978
TRAJ: 100 m. zero	- 1.5"	0.0"	- 7.7"	- 26.3"	- 52.0"	- 103.9"
TRAJ: 200 m. zero	- 1.5"	3.9"	0.0"	- 14.7"	- 37.1"	- 84.6"
TRAJ: 300 m. zero	- 1.5"	8.8"	9.8"	0.0"	- 18.2"	- 60.0"
TRAJ: 385 m. zero	- 1.5"	13.5"	19.3"	14.3"	0.0"	- 36.3"
TRAJ: 500 m. zero	- 1.5"	20.8"	33.8"	36.1"	28.0"	0.0"
VELOCITY (fps)	2200	2030	1870	1719	1600	1452
ENERGY (ft. lbs.)	2042	1739	1476	1247	1080	890
TRAJ: 100 m. zero	- 1.5"	0.0"	- 8.5"	- 28.9"	- 57.1"	- 114.2"
TRAJ: 200 m. zero	- 1.5"	4.3"	0.0"	- 16.1"	- 40.7"	- 92.8"
TRAJ: 300 m. zero	- 1.5"	9.7"	10.8"	0.0"	- 20.0"	- 65.9"
TRAJ: 385 m. zero	- 1.5"	14.9"	21.2"	15.8"	0.0"	- 39.9"
TRAJ: 500 m. zero	- 1.5"	22.8"	37.1"	39.6"	30.7"	0.0"



## TRAJECTORY TABLES (SHORT RANGE PISTOL)

9 MM (.355" Dia.) 90 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .102 BALLISTIC COEFFICIENT: .083

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1500	1318	1173	1073	1000	942
ENERGY (ft. lbs.)	450	347	275	230	200	177
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.8"	-14.9"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.1"	-6.4"	-13.1"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.5"	-9.4"
TRAJ: 100 m. zero	-.8"	2.0"	3.2"	2.6"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.0"	5.2"	5.7"	4.1"	0.0"
VELOCITY (fps)	1400	1236	1116	1032	968	915
ENERGY (ft. lbs.)	392	305	249	213	187	167
TRAJ: 25 m. zero	-.8"	0.0"	-.9"	-3.8"	-9.0"	-16.7"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-7.1"	-14.4"
TRAJ: 75 m. zero	-.8"	1.3"	1.8"	0.0"	-3.9"	-10.3"
TRAJ: 100 m. zero	-.8"	2.3"	3.6"	2.9"	0.0"	-5.4"
TRAJ: 125 m. zero	-.8"	3.4"	5.8"	6.2"	4.4"	0.0"
VELOCITY (fps)	1300	1161	1064	993	937	887
ENERGY (ft. lbs.)	338	269	226	197	176	157
TRAJ: 25 m. zero	-.8"	0.0"	-1.1"	-4.4"	-10.2"	-18.9"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.7"	-7.9"	-16.0"
TRAJ: 75 m. zero	-.8"	1.5"	1.8"	0.0"	-4.3"	-11.4"
TRAJ: 100 m. zero	-.8"	2.6"	4.0"	3.2"	0.0"	-6.0"
TRAJ: 125 m. zero	-.8"	3.8"	6.4"	6.9"	4.8"	0.0"
VELOCITY (fps)	1200	1092	1014	954	903	856
ENERGY (ft. lbs.)	288	238	206	182	163	146
TRAJ: 25 m. zero	-.8"	0.0"	-1.3"	-5.2"	-11.7"	-21.4"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-3.1"	-8.9"	-18.0"
TRAJ: 75 m. zero	-.8"	1.7"	2.1"	0.0"	-4.7"	-12.7"
TRAJ: 100 m. zero	-.8"	2.9"	4.5"	3.6"	0.0"	-6.7"
TRAJ: 125 m. zero	-.8"	4.3"	7.2"	7.8"	5.4"	0.0"
VELOCITY (fps)	1100	1020	959	907	860	818
ENERGY (ft. lbs.)	242	208	184	164	148	134
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.1"	-13.7"	-24.7"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.6"	-10.3"	-20.4"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.5"	-14.3"
TRAJ: 100 m. zero	-.8"	3.4"	5.2"	4.2"	0.0"	-7.4"
TRAJ: 125 m. zero	-.8"	4.9"	8.2"	8.6"	6.0"	0.0"
VELOCITY (fps)	1050	982	928	879	835	795
ENERGY (ft. lbs.)	220	193	172	154	139	126
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.7"	-14.9"	-26.7"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.9"	-11.1"	-22.0"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.9"	-15.4"
TRAJ: 100 m. zero	-.8"	3.7"	5.6"	4.4"	0.0"	-8.0"
TRAJ: 125 m. zero	-.8"	5.4"	8.8"	9.3"	6.5"	0.0"
VELOCITY (fps)	1000	943	893	847	806	769
ENERGY (ft. lbs.)	200	178	159	143	130	118
TRAJ: 25 m. zero	-.8"	0.0"	-2.1"	-7.5"	-16.5"	-29.2"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.3"	-12.2"	-23.9"
TRAJ: 75 m. zero	-.8"	2.5"	2.9"	0.0"	-6.4"	-16.5"
TRAJ: 100 m. zero	-.8"	4.1"	6.1"	4.8"	0.0"	-8.5"
TRAJ: 125 m. zero	-.8"	5.8"	9.6"	10.0"	6.8"	0.0"
VELOCITY (fps)	950	899	853	812	774	738
ENERGY (ft. lbs.)	180	162	145	132	120	109
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-8.3"	-18.1"	-32.3"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.6"	-13.2"	-26.1"
TRAJ: 75 m. zero	-.8"	2.8"	3.1"	0.0"	-7.0"	-18.4"
TRAJ: 100 m. zero	-.8"	4.5"	6.6"	5.3"	0.0"	-9.5"
TRAJ: 125 m. zero	-.8"	6.5"	10.5"	11.1"	7.7"	0.0"
VELOCITY (fps)	900	854	813	775	739	704
ENERGY (ft. lbs.)	162	146	132	120	109	99
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.3"	-20.2"	-36.2"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.2"	-14.8"	-29.4"
TRAJ: 75 m. zero	-.8"	3.1"	3.5"	0.0"	-7.8"	-20.6"
TRAJ: 100 m. zero	-.8"	5.1"	7.4"	5.9"	0.0"	-10.8"
TRAJ: 125 m. zero	-.8"	7.2"	11.8"	12.4"	8.7"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	850	809	771	736	701	669
ENERGY (ft. lbs.)	144	131	119	108	98	89
TRAJ: 25 m. zero	-.8"	0.0"	-3.2"	-10.6"	-23.1"	-40.4"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.7"	-16.6"	-32.3"
TRAJ: 75 m. zero	-.8"	3.5"	3.8"	0.0"	-9.0"	-22.7"
TRAJ: 100 m. zero	-.8"	5.8"	8.3"	6.8"	0.0"	-11.4"
TRAJ: 125 m. zero	-.8"	8.1"	12.9"	13.6"	9.2"	0.0"
VELOCITY (fps)	800	763	728	694	662	631
ENERGY (ft. lbs.)	128	116	106	96	88	80
TRAJ: 25 m. zero	-.8"	0.0"	-3.6"	-12.2"	-26.0"	-45.8"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.7"	-18.7"	-36.7"
TRAJ: 75 m. zero	-.8"	4.1"	4.5"	0.0"	-9.7"	-25.4"
TRAJ: 100 m. zero	-.8"	6.5"	9.4"	7.3"	0.0"	-13.3"
TRAJ: 125 m. zero	-.8"	9.2"	14.7"	15.3"	10.7"	0.0"

### 9 MM (.355" Dia.) 100 GRAIN FULL METAL JACKET

SECTIONAL DENSITY: .113 BALLISTIC COEFFICIENT: .098

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1258	1147	1067	1005	955
ENERGY (ft. lbs.)	435	351	292	253	224	203
TRAJ: 25 m. zero	-.8"	0.0"	-.8"	-3.6"	-8.5"	-15.8"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.3"	-6.8"	-13.6"
TRAJ: 75 m. zero	-.8"	1.2"	1.5"	0.0"	-3.7"	-9.8"
TRAJ: 100 m. zero	-.8"	2.1"	3.4"	2.8"	0.0"	-5.1"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.9"	4.1"	0.0"
VELOCITY (fps)	1300	1179	1090	1023	970	924
ENERGY (ft. lbs.)	375	309	264	232	209	190
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.2"	-9.8"	-18.0"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.6"	-7.6"	-15.3"
TRAJ: 75 m. zero	-.8"	1.4"	1.8"	0.0"	-4.1"	-10.9"
TRAJ: 100 m. zero	-.8"	2.5"	3.8"	3.1"	0.0"	-5.7"
TRAJ: 125 m. zero	-.8"	3.6"	6.1"	6.6"	4.6"	0.0"
VELOCITY (fps)	1200	1106	1035	980	933	891
ENERGY (ft. lbs.)	320	272	238	213	193	176
TRAJ: 25 m. zero	-.8"	0.0"	-1.3"	-5.0"	-11.3"	-20.5"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-2.9"	-8.6"	-17.1"
TRAJ: 75 m. zero	-.8"	1.7"	2.0"	0.0"	-4.6"	-12.1"
TRAJ: 100 m. zero	-.8"	2.8"	4.3"	3.5"	0.0"	-6.2"
TRAJ: 125 m. zero	-.8"	4.1"	6.8"	7.3"	5.0"	0.0"
VELOCITY (fps)	1100	1031	976	930	888	850
ENERGY (ft. lbs.)	269	236	212	192	175	160
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-6.0"	-13.3"	-23.6"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.5"	-9.9"	-19.4"
TRAJ: 75 m. zero	-.8"	2.0"	2.3"	0.0"	-5.2"	-13.6"
TRAJ: 100 m. zero	-.8"	3.3"	5.0"	4.0"	0.0"	-7.0"
TRAJ: 125 m. zero	-.8"	4.7"	7.8"	8.2"	5.6"	0.0"
VELOCITY (fps)	1050	992	944	901	861	825
ENERGY (ft. lbs.)	245	219	198	180	165	151
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.5"	-14.5"	-25.8"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.7"	-10.8"	-21.1"
TRAJ: 75 m. zero	-.8"	2.2"	2.5"	0.0"	-5.7"	-14.8"
TRAJ: 100 m. zero	-.8"	3.6"	5.4"	4.3"	0.0"	-7.6"
TRAJ: 125 m. zero	-.8"	5.2"	8.5"	8.9"	6.1"	0.0"
VELOCITY (fps)	1000	951	907	867	830	797
ENERGY (ft. lbs.)	222	201	183	167	153	141
TRAJ: 25 m. zero	-.8"	0.0"	-2.1"	-7.3"	-16.0"	-28.1"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.1"	-11.8"	-22.8"
TRAJ: 75 m. zero	-.8"	2.5"	2.8"	0.0"	-6.2"	-15.8"
TRAJ: 100 m. zero	-.8"	4.0"	5.9"	4.7"	0.0"	-8.0"
TRAJ: 125 m. zero	-.8"	5.6"	9.1"	9.5"	6.4"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	950	907	867	830	796	765
ENERGY (ft. lbs.)	200	183	167	153	141	130
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-8.2"	-17.8"	-31.2"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.6"	-13.1"	-25.3"
TRAJ: 75 m. zero	-.8"	2.8"	3.1"	0.0"	-6.8"	-17.5"
TRAJ: 100 m. zero	-.8"	4.5"	6.6"	5.2"	0.0"	-8.9"
TRAJ: 125 m. zero	-.8"	6.3"	10.1"	10.5"	7.1"	0.0"
VELOCITY (fps)	900	861	825	791	760	730
ENERGY (ft. lbs.)	180	165	151	139	128	118
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.3"	-19.9"	-34.9"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.2"	-14.5"	-28.1"
TRAJ: 75 m. zero	-.8"	3.1"	3.5"	0.0"	-7.4"	-19.3"
TRAJ: 100 m. zero	-.8"	5.0"	7.3"	5.6"	0.0"	-10.0"
TRAJ: 125 m. zero	-.8"	7.0"	11.3"	11.6"	8.0"	0.0"
VELOCITY (fps)	850	815	782	751	722	693
ENERGY (ft. lbs.)	160	148	136	125	116	107
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-10.6"	-22.2"	-39.2"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.8"	-15.8"	-31.2"
TRAJ: 75 m. zero	-.8"	3.5"	3.9"	0.0"	-8.1"	-21.5"
TRAJ: 100 m. zero	-.8"	5.6"	7.9"	6.1"	0.0"	-11.4"
TRAJ: 125 m. zero	-.8"	7.9"	12.5"	13.0"	9.2"	0.0"
VELOCITY (fps)	800	769	738	709	681	654
ENERGY (ft. lbs.)	142	131	121	112	103	95
TRAJ: 25 m. zero	-.8"	0.0"	-3.7"	-12.0"	-25.5"	-44.5"
TRAJ: 50 m. zero	-.8"	1.9"	0.0"	-6.4"	-18.0"	-35.2"
TRAJ: 75 m. zero	-.8"	4.0"	4.3"	0.0"	-9.4"	-24.4"
TRAJ: 100 m. zero	-.8"	6.4"	9.0"	7.1"	0.0"	-12.6"
TRAJ: 125 m. zero	-.8"	8.9"	14.1"	14.7"	10.1"	0.0"

### 9 MM (.355" Dia.) 115 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .130 BALLISTIC COEFFICIENT: .127

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1300	1203	1127	1067	1018	976
ENERGY (ft. lbs.)	432	370	324	291	265	243
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.0"	-9.2"	-16.9"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.5"	-7.1"	-14.3"
TRAJ: 75 m. zero	-.8"	1.3"	1.7"	0.0"	-3.8"	-10.1"
TRAJ: 100 m. zero	-.8"	2.3"	3.6"	2.9"	0.0"	-5.3"
TRAJ: 125 m. zero	-.8"	3.4"	5.7"	6.1"	4.3"	0.0"
VELOCITY (fps)	1200	1125	1065	1016	975	939
ENERGY (ft. lbs.)	368	323	290	264	243	225
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.8"	-10.8"	-19.3"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.8"	-8.2"	-16.1"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.3"	-11.3"
TRAJ: 100 m. zero	-.8"	2.7"	4.1"	3.3"	0.0"	-5.8"
TRAJ: 125 m. zero	-.8"	3.9"	6.5"	6.8"	4.7"	0.0"
VELOCITY (fps)	1100	1045	1000	961	926	893
ENERGY (ft. lbs.)	309	279	255	236	219	204
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.7"	-12.6"	-22.5"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.5"	-18.6"
TRAJ: 75 m. zero	-.8"	1.9"	2.3"	0.0"	-4.9"	-13.0"
TRAJ: 100 m. zero	-.8"	3.2"	4.8"	3.7"	0.0"	-6.8"
TRAJ: 125 m. zero	-.8"	4.5"	7.5"	7.8"	5.4"	0.0"
VELOCITY (fps)	1000	962	926	894	863	834
ENERGY (ft. lbs.)	255	236	219	204	190	178
TRAJ: 25 m. zero	-.8"	0.0"	-2.1"	-7.1"	-15.5"	-27.4"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-3.8"	-11.2"	-22.0"
TRAJ: 75 m. zero	-.8"	2.4"	2.6"	0.0"	-6.0"	-15.5"
TRAJ: 100 m. zero	-.8"	3.9"	5.6"	4.5"	0.0"	-8.0"
TRAJ: 125 m. zero	-.8"	5.5"	8.8"	9.3"	6.4"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	950	916	884	854	826	800
ENERGY (ft. lbs.)	231	214	200	186	174	163
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-7.9"	-17.1"	-29.9"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.4"	-12.4"	-24.1"
TRAJ: 75 m. zero	-.8"	2.7"	3.0"	0.0"	-6.5"	-16.6"
TRAJ: 100 m. zero	-.8"	4.3"	6.2"	4.9"	0.0"	-8.4"
TRAJ: 125 m. zero	-.8"	6.0"	9.6"	10.0"	6.8"	0.0"
VELOCITY (fps)	900	869	840	813	788	763
ENERGY (ft. lbs.)	207	193	180	169	159	149
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-8.9"	-18.9"	-33.5"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.9"	-13.6"	-26.8"
TRAJ: 75 m. zero	-.8"	3.0"	3.3"	0.0"	-7.0"	-18.6"
TRAJ: 100 m. zero	-.8"	4.7"	6.8"	5.3"	0.0"	-9.8"
TRAJ: 125 m. zero	-.8"	6.7"	10.8"	11.2"	7.9"	0.0"
VELOCITY (fps)	850	823	797	772	748	725
ENERGY (ft. lbs.)	185	173	162	152	143	134
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-10.2"	-21.7"	-37.7"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.6"	-15.7"	-30.1"
TRAJ: 75 m. zero	-.8"	3.4"	3.8"	0.0"	-8.1"	-20.6"
TRAJ: 100 m. zero	-.8"	5.4"	7.9"	6.1"	0.0"	-10.5"
TRAJ: 125 m. zero	-.8"	7.6"	12.1"	12.4"	8.4"	0.0"
VELOCITY (fps)	800	776	752	728	706	684
ENERGY (ft. lbs.)	163	154	144	135	127	119
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-11.9"	-24.6"	-42.8"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.6"	-17.5"	-34.0"
TRAJ: 75 m. zero	-.8"	4.0"	4.4"	0.0"	-8.7"	-22.9"
TRAJ: 100 m. zero	-.8"	6.2"	8.8"	6.6"	0.0"	-12.0"
TRAJ: 125 m. zero	-.8"	8.6"	13.6"	13.8"	9.6"	0.0"

### 9 MM (.355" Dia.) 124 GRAIN FULL METAL JACKETED FLAT POINT

SECTIONAL DENSITY: .141 BALLISTIC COEFFICIENT: .152

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1300	1218	1149	1094	1048	1009
ENERGY (ft. lbs.)	465	409	364	330	302	280
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-3.9"	-8.9"	-16.2"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-6.9"	-13.7"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.7"	-9.6"
TRAJ: 100 m. zero	-.8"	2.2"	3.5"	2.8"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.8"	4.0"	0.0"
VELOCITY (fps)	1250	1176	1116	1067	1025	989
ENERGY (ft. lbs.)	430	381	343	314	289	269
TRAJ: 25 m. zero	-.8"	0.0"	-1.1"	-4.2"	-9.6"	-17.3"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.5"	-7.3"	-14.5"
TRAJ: 75 m. zero	-.8"	1.4"	1.7"	0.0"	-3.9"	-10.2"
TRAJ: 100 m. zero	-.8"	2.4"	3.7"	3.0"	0.0"	-5.3"
TRAJ: 125 m. zero	-.8"	3.5"	5.8"	6.2"	4.3"	0.0"
VELOCITY (fps)	1200	1136	1083	1039	1001	968
ENERGY (ft. lbs.)	397	355	323	297	276	258
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.4"	-18.6"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.7"	-7.9"	-15.5"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.2"	-10.9"
TRAJ: 100 m. zero	-.8"	2.6"	4.0"	3.2"	0.0"	-5.6"
TRAJ: 125 m. zero	-.8"	3.7"	6.2"	6.5"	4.5"	0.0"
VELOCITY (fps)	1150	1095	1049	1010	976	945
ENERGY (ft. lbs.)	364	330	303	281	262	246
TRAJ: 25 m. zero	-.8"	0.0"	-1.3"	-5.0"	-11.2"	-20.2"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-2.9"	-8.4"	-16.7"
TRAJ: 75 m. zero	-.8"	1.7"	2.0"	0.0"	-4.4"	-11.7"
TRAJ: 100 m. zero	-.8"	2.8"	4.2"	3.3"	0.0"	-6.1"
TRAJ: 125 m. zero	-.8"	4.0"	6.7"	7.0"	4.9"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1054	1014	979	948	919
ENERGY (ft. lbs.)	333	306	283	264	248	233
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.4"	-22.1"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.3"	-18.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-4.8"	-12.6"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.7"	0.0"	-6.5"
TRAJ: 125 m. zero	-.8"	4.4"	7.3"	7.6"	5.2"	0.0"
VELOCITY (fps)	1050	1011	977	946	917	890
ENERGY (ft. lbs.)	304	282	263	246	232	218
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.2"	-13.6"	-24.0"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.6"	-10.1"	-19.6"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.3"	-13.5"
TRAJ: 100 m. zero	-.8"	3.4"	5.1"	4.0"	0.0"	-6.9"
TRAJ: 125 m. zero	-.8"	4.8"	7.9"	8.2"	5.6"	0.0"
VELOCITY (fps)	1000	967	937	909	882	857
ENERGY (ft. lbs.)	275	258	242	228	214	202
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.9"	-15.0"	-26.3"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.8"	-11.0"	-21.3"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.8"	-14.8"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.4"	0.0"	-7.5"
TRAJ: 125 m. zero	-.8"	5.3"	8.5"	8.9"	6.0"	0.0"
VELOCITY (fps)	950	921	894	868	844	821
ENERGY (ft. lbs.)	249	234	220	207	196	186
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.7"	-16.5"	-28.9"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.4"	-12.0"	-23.3"
TRAJ: 75 m. zero	-.8"	2.6"	3.0"	0.0"	-6.1"	-15.9"
TRAJ: 100 m. zero	-.8"	4.1"	6.0"	4.6"	0.0"	-8.2"
TRAJ: 125 m. zero	-.8"	5.8"	9.3"	9.6"	6.6"	0.0"
VELOCITY (fps)	900	874	849	826	804	783
ENERGY (ft. lbs.)	223	210	199	188	178	169
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-8.7"	-18.6"	-32.4"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.7"	-13.2"	-25.7"
TRAJ: 75 m. zero	-.8"	2.9"	3.2"	0.0"	-6.9"	-17.8"
TRAJ: 100 m. zero	-.8"	4.7"	6.6"	5.2"	0.0"	-9.1"
TRAJ: 125 m. zero	-.8"	6.5"	10.3"	10.7"	7.3"	0.0"

**38 Caliber (.357" Dia.) 110 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .123 BALLISTIC COEFFICIENT: .109

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1500	1358	1236	1140	1068	1012
ENERGY (ft. lbs.)	550	451	373	318	279	250
TRAJ: 25 m. zero	-.8"	0.0"	-.6"	-2.9"	-7.2"	-13.4"
TRAJ: 50 m. zero	-.8"	.3"	0.0"	-1.9"	-5.8"	-11.8"
TRAJ: 75 m. zero	-.8"	1.0"	1.3"	0.0"	-3.2"	-8.5"
TRAJ: 100 m. zero	-.8"	1.8"	2.9"	2.4"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.7"	4.7"	5.1"	3.6"	0.0"
VELOCITY (fps)	1400	1271	1167	1089	1028	979
ENERGY (ft. lbs.)	479	395	333	290	258	234
TRAJ: 25 m. zero	-.8"	0.0"	-.8"	-3.5"	-8.3"	-15.3"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.2"	-6.6"	-13.2"
TRAJ: 75 m. zero	-.8"	1.2"	1.5"	0.0"	-3.6"	-9.4"
TRAJ: 100 m. zero	-.8"	2.1"	3.3"	2.7"	0.0"	-4.9"
TRAJ: 125 m. zero	-.8"	3.1"	5.3"	5.7"	4.0"	0.0"
VELOCITY (fps)	1300	1189	1106	1041	990	946
ENERGY (ft. lbs.)	413	345	299	265	239	219
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.1"	-9.5"	-17.5"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.6"	-7.4"	-14.9"
TRAJ: 75 m. zero	-.8"	1.4"	1.7"	0.0"	-3.9"	-10.5"
TRAJ: 100 m. zero	-.8"	2.4"	3.7"	3.0"	0.0"	-5.6"
TRAJ: 125 m. zero	-.8"	3.5"	6.0"	6.4"	4.5"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1200	1114	1048	995	951	911
ENERGY (ft. lbs.)	352	303	268	242	221	203
TRAJ: 25 m. zero	-.8"	0.0"	-1.3"	-4.9"	-11.1"	-20.1"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-2.9"	-8.5"	-16.8"
TRAJ: 75 m. zero	-.8"	1.6"	2.0"	0.0"	-4.5"	-11.8"
TRAJ: 100 m. zero	-.8"	2.8"	4.3"	3.4"	0.0"	-6.2"
TRAJ: 125 m. zero	-.8"	4.0"	6.7"	7.1"	5.0"	0.0"
VELOCITY (fps)	1100	1037	986	944	904	868
ENERGY (ft. lbs.)	296	263	238	218	200	184
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-5.8"	-13.0"	-23.3"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.7"	-19.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.3"	-13.6"
TRAJ: 100 m. zero	-.8"	3.3"	4.9"	4.0"	0.0"	-6.9"
TRAJ: 125 m. zero	-.8"	4.7"	7.7"	8.2"	5.8"	0.0"
VELOCITY (fps)	1050	997	953	913	876	842
ENERGY (ft. lbs.)	269	243	222	204	187	173
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.5"	-14.3"	-25.4"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.7"	-10.6"	-20.8"
TRAJ: 75 m. zero	-.8"	2.2"	2.5"	0.0"	-5.6"	-14.5"
TRAJ: 100 m. zero	-.8"	3.6"	5.3"	4.2"	0.0"	-7.5"
TRAJ: 125 m. zero	-.8"	5.1"	8.3"	8.7"	6.0"	0.0"
VELOCITY (fps)	1000	956	916	879	845	813
ENERGY (ft. lbs.)	244	223	205	189	174	161
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-7.2"	-15.6"	-27.8"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.1"	-11.5"	-22.6"
TRAJ: 75 m. zero	-.8"	2.4"	2.7"	0.0"	-6.0"	-15.7"
TRAJ: 100 m. zero	-.8"	3.9"	5.8"	4.5"	0.0"	-8.2"
TRAJ: 125 m. zero	-.8"	5.6"	9.1"	9.5"	6.6"	0.0"
VELOCITY (fps)	950	911	874	840	809	780
ENERGY (ft. lbs.)	220	203	187	172	160	149
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-8.2"	-17.5"	-30.7"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.6"	-12.7"	-24.7"
TRAJ: 75 m. zero	-.8"	2.7"	3.1"	0.0"	-6.5"	-17.0"
TRAJ: 100 m. zero	-.8"	4.4"	6.4"	4.9"	0.0"	-8.8"
TRAJ: 125 m. zero	-.8"	6.2"	9.9"	10.2"	7.1"	0.0"
VELOCITY (fps)	900	865	832	801	772	744
ENERGY (ft. lbs.)	198	183	169	157	146	135
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-9.1"	-19.7"	-34.7"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.1"	-14.3"	-27.9"
TRAJ: 75 m. zero	-.8"	3.1"	3.4"	0.0"	-7.4"	-19.4"
TRAJ: 100 m. zero	-.8"	4.9"	7.2"	5.6"	0.0"	-10.0"
TRAJ: 125 m. zero	-.8"	6.9"	11.2"	11.6"	8.0"	0.0"
VELOCITY (fps)	850	818	789	760	733	707
ENERGY (ft. lbs.)	177	163	152	141	131	122
TRAJ: 25 m. zero	-.8"	0.0"	-2.9"	-10.3"	-22.0"	-38.3"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.9"	-16.0"	-30.9"
TRAJ: 75 m. zero	-.8"	3.5"	4.0"	0.0"	-8.1"	-21.0"
TRAJ: 100 m. zero	-.8"	5.5"	8.0"	6.1"	0.0"	-10.8"
TRAJ: 125 m. zero	-.8"	7.7"	12.4"	12.6"	8.7"	0.0"
VELOCITY (fps)	800	772	744	717	692	667
ENERGY (ft. lbs.)	156	146	135	126	117	109
TRAJ: 25 m. zero	-.8"	0.0"	-3.6"	-12.0"	-25.0"	-43.8"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.5"	-17.7"	-34.6"
TRAJ: 75 m. zero	-.8"	4.0"	4.4"	0.0"	-8.9"	-23.6"
TRAJ: 100 m. zero	-.8"	6.3"	8.9"	6.7"	0.0"	-12.4"
TRAJ: 125 m. zero	-.8"	8.8"	13.9"	14.2"	10.0"	0.0"



# 38 Caliber (.357" Dia.) 125 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .140 BALLISTIC COEFFICIENT: .122

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1500	1372	1260	1168	1097	1040
ENERGY (ft. lbs.)	625	523	441	379	334	300
TRAJ: 25 m. zero	-.8"	0.0"	-.6"	-2.8"	-6.8"	-13.0"
TRAJ: 50 m. zero	-.8"	.3"	0.0"	-1.9"	-5.6"	-11.4"
TRAJ: 75 m. zero	-.8"	.9"	1.3"	0.0"	-3.0"	-8.2"
TRAJ: 100 m. zero	-.8"	1.7"	2.8"	2.3"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.6"	4.6"	5.0"	3.5"	0.0"
VELOCITY (fps)	1400	1284	1186	1111	1052	1004
ENERGY (ft. lbs.)	544	458	391	343	307	280
TRAJ: 25 m. zero	-.8"	0.0"	-.8"	-3.4"	-8.0"	-14.8"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.2"	-6.4"	-12.7"
TRAJ: 75 m. zero	-.8"	1.1"	1.5"	0.0"	-3.4"	-9.1"
TRAJ: 100 m. zero	-.8"	2.0"	3.2"	2.6"	0.0"	-4.7"
TRAJ: 125 m. zero	-.8"	3.0"	5.1"	5.5"	3.8"	0.0"
VELOCITY (fps)	1300	1200	1121	1060	1010	968
ENERGY (ft. lbs.)	469	400	349	312	283	260
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.1"	-9.4"	-17.1"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.5"	-7.3"	-14.5"
TRAJ: 75 m. zero	-.8"	1.4"	1.7"	0.0"	-3.9"	-10.2"
TRAJ: 100 m. zero	-.8"	2.4"	3.7"	3.0"	0.0"	-5.3"
TRAJ: 125 m. zero	-.8"	3.4"	5.8"	6.2"	4.3"	0.0"
VELOCITY (fps)	1200	1122	1061	1011	969	932
ENERGY (ft. lbs.)	400	350	313	284	261	241
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.8"	-10.8"	-19.5"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.9"	-8.2"	-16.3"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.4"	-11.4"
TRAJ: 100 m. zero	-.8"	2.7"	4.1"	3.3"	0.0"	-5.9"
TRAJ: 125 m. zero	-.8"	3.9"	6.5"	6.9"	4.8"	0.0"
VELOCITY (fps)	1150	1083	1029	994	946	911
ENERGY (ft. lbs.)	367	326	294	269	248	230
TRAJ: 25 m. zero	-.8"	0.0"	-1.4"	-5.3"	-11.7"	-20.9"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-3.1"	-8.8"	-17.3"
TRAJ: 75 m. zero	-.8"	1.8"	2.1"	0.0"	-4.6"	-12.0"
TRAJ: 100 m. zero	-.8"	2.9"	4.4"	3.5"	0.0"	-6.2"
TRAJ: 125 m. zero	-.8"	4.2"	6.9"	7.2"	5.0"	0.0"
VELOCITY (fps)	1100	1043	996	957	920	887
ENERGY (ft. lbs.)	336	302	275	254	235	218
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-5.7"	-12.8"	-22.6"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.5"	-18.6"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.2"	-13.1"
TRAJ: 100 m. zero	-.8"	3.2"	4.8"	3.9"	0.0"	-6.6"
TRAJ: 125 m. zero	-.8"	4.5"	7.4"	7.9"	5.3"	0.0"
VELOCITY (fps)	1050	1002	962	925	891	860
ENERGY (ft. lbs.)	306	279	257	238	220	205
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.4"	-14.0"	-24.6"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.7"	-10.5"	-20.2"
TRAJ: 75 m. zero	-.8"	2.1"	2.5"	0.0"	-5.4"	-13.9"
TRAJ: 100 m. zero	-.8"	3.5"	5.3"	4.1"	0.0"	-7.1"
TRAJ: 125 m. zero	-.8"	4.9"	8.1"	8.4"	5.7"	0.0"
VELOCITY (fps)	1000	960	924	890	858	829
ENERGY (ft. lbs.)	278	256	237	220	204	191
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-7.1"	-15.5"	-27.2"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.0"	-11.5"	-22.2"
TRAJ: 75 m. zero	-.8"	2.4"	2.7"	0.0"	-6.0"	-15.4"
TRAJ: 100 m. zero	-.8"	3.9"	5.8"	4.6"	0.0"	-7.8"
TRAJ: 125 m. zero	-.8"	5.5"	8.9"	9.3"	6.2"	0.0"
VELOCITY (fps)	950	915	882	851	822	795
ENERGY (ft. lbs.)	251	232	216	201	188	175
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-7.9"	-17.2"	-30.1"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.5"	-12.5"	-24.4"
TRAJ: 75 m. zero	-.8"	2.7"	3.0"	0.0"	-6.5"	-16.9"
TRAJ: 100 m. zero	-.8"	4.3"	6.3"	4.9"	0.0"	-8.6"
TRAJ: 125 m. zero	-.8"	6.0"	9.8"	10.1"	6.9"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	900	868	838	810	784	759
ENERGY (ft. lbs.)	225	209	195	182	171	160
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-9.0"	-19.1"	-33.4"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.9"	-13.8"	-26.7"
TRAJ: 75 m. zero	-.8"	3.0"	3.3"	0.0"	-7.1"	-18.4"
TRAJ: 100 m. zero	-.8"	4.8"	6.9"	5.4"	0.0"	-9.5"
TRAJ: 125 m. zero	-.8"	6.7"	10.7"	11.1"	7.6"	0.0"
VELOCITY (fps)	850	822	795	769	744	720
ENERGY (ft. lbs.)	201	188	175	164	154	144
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-10.3"	-22.0"	-38.3"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.7"	-15.9"	-30.6"
TRAJ: 75 m. zero	-.8"	3.5"	3.8"	0.0"	-8.2"	-21.0"
TRAJ: 100 m. zero	-.8"	5.5"	8.0"	6.2"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.7"	12.3"	12.6"	8.6"	0.0"
VELOCITY (fps)	800	775	750	726	702	679
ENERGY (ft. lbs.)	178	167	156	146	137	128
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-11.6"	-25.0"	-43.6"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.3"	-17.8"	-34.7"
TRAJ: 75 m. zero	-.8"	3.9"	4.2"	0.0"	-9.4"	-24.2"
TRAJ: 100 m. zero	-.8"	6.3"	8.9"	7.1"	0.0"	-12.3"
TRAJ: 125 m. zero	-.8"	8.7"	13.9"	14.5"	9.9"	0.0"

### 38 Caliber (.357" Dia.) 125 GRAIN JACKETED FLAT POINT

SECTIONAL DENSITY: .140 BALLISTIC COEFFICIENT: .120

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1500	1370	1257	1163	1092	1036
ENERGY (ft. lbs.)	625	521	439	376	331	298
TRAJ: 25 m. zero	-.8"	0.0"	-.6"	-2.8"	-6.9"	-13.0"
TRAJ: 50 m. zero	-.8"	.3"	0.0"	-1.9"	-5.7"	-11.5"
TRAJ: 75 m. zero	-.8"	1.0"	1.3"	0.0"	-3.1"	-8.2"
TRAJ: 100 m. zero	-.8"	1.7"	2.9"	2.3"	0.0"	-4.3"
TRAJ: 125 m. zero	-.8"	2.6"	4.6"	4.9"	3.5"	0.0"
VELOCITY (fps)	1400	1282	1184	1108	1049	1000
ENERGY (ft. lbs.)	544	456	389	341	306	278
TRAJ: 25 m. zero	-.8"	0.0"	-.8"	-3.4"	-8.0"	-14.9"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.2"	-6.4"	-12.9"
TRAJ: 75 m. zero	-.8"	1.1"	1.5"	0.0"	-3.4"	-9.2"
TRAJ: 100 m. zero	-.8"	2.0"	3.2"	2.6"	0.0"	-4.8"
TRAJ: 125 m. zero	-.8"	3.0"	5.2"	5.5"	3.9"	0.0"
VELOCITY (fps)	1300	1198	1119	1058	1007	965
ENERGY (ft. lbs.)	469	398	348	311	282	259
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.0"	-9.4"	-17.1"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.5"	-7.3"	-14.5"
TRAJ: 75 m. zero	-.8"	1.4"	1.7"	0.0"	-4.0"	-10.4"
TRAJ: 100 m. zero	-.8"	2.4"	3.7"	3.0"	0.0"	-5.3"
TRAJ: 125 m. zero	-.8"	3.4"	5.8"	6.2"	4.3"	0.0"
VELOCITY (fps)	1200	1121	1059	1009	966	929
ENERGY (ft. lbs.)	400	349	311	283	259	240
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.8"	-10.9"	-19.6"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.8"	-8.3"	-16.3"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.5"	-11.5"
TRAJ: 100 m. zero	-.8"	2.7"	4.2"	3.4"	0.0"	-5.9"
TRAJ: 125 m. zero	-.8"	3.9"	6.5"	6.9"	4.7"	0.0"
VELOCITY (fps)	1150	1082	1028	982	944	908
ENERGY (ft. lbs.)	367	325	293	268	247	229
TRAJ: 25 m. zero	-.8"	0.0"	-1.4"	-5.3"	-11.7"	-21.0"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-3.2"	-8.8"	-17.5"
TRAJ: 75 m. zero	-.8"	1.8"	2.2"	0.0"	-4.5"	-12.1"
TRAJ: 100 m. zero	-.8"	2.9"	4.4"	3.4"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.2"	7.0"	7.3"	5.1"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1043	995	955	918	884
ENERGY (ft. lbs.)	336	302	275	253	234	217
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-5.8"	-12.9"	-22.9"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.6"	-18.8"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.1"	-13.2"
TRAJ: 100 m. zero	-.8"	3.2"	4.8"	3.9"	0.0"	-6.8"
TRAJ: 125 m. zero	-.8"	4.6"	7.5"	8.0"	5.5"	0.0"
VELOCITY (fps)	1050	1002	960	923	889	857
ENERGY (ft. lbs.)	306	279	256	237	219	204
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.5"	-14.1"	-25.0"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.7"	-10.3"	-20.3"
TRAJ: 75 m. zero	-.8"	2.2"	2.5"	0.0"	-5.4"	-14.1"
TRAJ: 100 m. zero	-.8"	3.5"	5.2"	4.1"	0.0"	-7.3"
TRAJ: 125 m. zero	-.8"	5.0"	8.1"	8.5"	5.9"	0.0"
VELOCITY (fps)	1000	959	923	888	856	827
ENERGY (ft. lbs.)	278	255	237	219	203	190
TRAJ: 25 m. zero	-.8"	0.0"	-1.9"	-7.1"	-15.5"	-27.1"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.1"	-11.6"	-22.2"
TRAJ: 75 m. zero	-.8"	2.4"	2.8"	0.0"	-6.0"	-15.2"
TRAJ: 100 m. zero	-.8"	3.9"	5.8"	4.5"	0.0"	-7.7"
TRAJ: 125 m. zero	-.8"	5.4"	8.9"	9.1"	6.2"	0.0"
VELOCITY (fps)	950	914	881	849	820	793
ENERGY (ft. lbs.)	251	232	215	200	187	175
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-8.0"	-17.2"	-30.0"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.6"	-12.6"	-24.4"
TRAJ: 75 m. zero	-.8"	2.7"	3.1"	0.0"	-6.4"	-16.6"
TRAJ: 100 m. zero	-.8"	4.3"	6.3"	4.9"	0.0"	-8.5"
TRAJ: 125 m. zero	-.8"	6.0"	9.8"	10.0"	6.9"	0.0"
VELOCITY (fps)	900	868	837	809	782	757
ENERGY (ft. lbs.)	225	209	194	182	170	159
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.0"	-19.4"	-33.7"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-4.9"	-13.9"	-26.8"
TRAJ: 75 m. zero	-.8"	3.0"	3.3"	0.0"	-7.4"	-18.6"
TRAJ: 100 m. zero	-.8"	4.9"	7.0"	5.6"	0.0"	-9.3"
TRAJ: 125 m. zero	-.8"	6.7"	10.7"	11.2"	7.5"	0.0"
VELOCITY (fps)	850	821	794	768	743	718
ENERGY (ft. lbs.)	201	187	175	164	153	143
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-10.1"	-21.6"	-38.2"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.6"	-15.6"	-30.7"
TRAJ: 75 m. zero	-.8"	3.4"	3.8"	0.0"	-8.0"	-21.2"
TRAJ: 100 m. zero	-.8"	5.4"	7.8"	6.1"	0.0"	-11.1"
TRAJ: 125 m. zero	-.8"	7.6"	12.3"	12.8"	9.0"	0.0"
VELOCITY (fps)	800	774	749	724	701	678
ENERGY (ft. lbs.)	178	166	156	146	136	128
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.8"	-24.5"	-42.8"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.5"	-17.5"	-34.0"
TRAJ: 75 m. zero	-.8"	3.9"	4.4"	0.0"	-8.7"	-23.1"
TRAJ: 100 m. zero	-.8"	6.1"	8.8"	6.6"	0.0"	-12.1"
TRAJ: 125 m. zero	-.8"	8.6"	13.6"	13.9"	9.7"	0.0"

### 38 Caliber (.357" Dia.) 158 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .177 BALLISTIC COEFFICIENT: .155

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1307	1225	1156	1101	1055
ENERGY (ft. lbs.)	688	599	527	469	425	391
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.5"	-13.9"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.1"	-6.0"	-12.0"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.2"	-8.5"
TRAJ: 100 m. zero	-.8"	1.9"	3.0"	2.4"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.8"	4.8"	5.1"	3.6"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1300	1219	1152	1097	1052	1013
ENERGY (ft. lbs.)	593	521	466	422	388	360
TRAJ: 25 m. zero	-.8"	0.0"	-.9"	-3.9"	-8.8"	-16.0"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-6.8"	-13.6"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.6"	-9.5"
TRAJ: 100 m. zero	-.8"	2.2"	3.4"	2.7"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.7"	4.0"	0.0"
VELOCITY (fps)	1200	1137	1085	1041	1004	971
ENERGY (ft. lbs.)	505	454	413	380	354	331
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.3"	-18.6"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.8"	-7.8"	-15.5"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.1"	-10.8"
TRAJ: 100 m. zero	-.8"	2.6"	3.9"	3.1"	0.0"	-5.6"
TRAJ: 125 m. zero	-.8"	3.7"	6.2"	6.5"	4.5"	0.0"
VELOCITY (fps)	1100	1054	1015	981	950	922
ENERGY (ft. lbs.)	425	390	362	338	317	298
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.5"	-12.3"	-21.7"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.3"	-17.9"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-4.9"	-12.5"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.7"	0.0"	-6.2"
TRAJ: 125 m. zero	-.8"	4.4"	7.2"	7.5"	5.0"	0.0"
VELOCITY (fps)	1050	1012	978	948	919	893
ENERGY (ft. lbs.)	387	359	336	315	296	280
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.2"	-13.7"	-23.8"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.5"	-10.1"	-19.3"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.4"	-13.4"
TRAJ: 100 m. zero	-.8"	3.4"	5.1"	4.1"	0.0"	-6.6"
TRAJ: 125 m. zero	-.8"	4.8"	7.7"	8.1"	5.3"	0.0"
VELOCITY (fps)	1000	968	938	911	884	859
ENERGY (ft. lbs.)	351	329	309	291	274	259
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.8"	-15.1"	-26.5"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.7"	-10.9"	-21.3"
TRAJ: 75 m. zero	-.8"	2.3"	2.5"	0.0"	-5.9"	-15.1"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.5"	0.0"	-7.6"
TRAJ: 125 m. zero	-.8"	5.3"	8.6"	9.1"	6.1"	0.0"
VELOCITY (fps)	950	922	895	870	846	823
ENERGY (ft. lbs.)	317	298	281	266	251	238
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-7.7"	-16.5"	-29.1"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.2"	-11.9"	-23.3"
TRAJ: 75 m. zero	-.8"	2.6"	2.8"	0.0"	-6.2"	-16.2"
TRAJ: 100 m. zero	-.8"	4.1"	6.0"	4.7"	0.0"	-8.4"
TRAJ: 125 m. zero	-.8"	5.8"	9.3"	9.8"	6.7"	0.0"
VELOCITY (fps)	900	875	850	827	805	785
ENERGY (ft. lbs.)	284	269	254	240	227	216
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.0"	-19.0"	-32.5"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-4.8"	-13.5"	-25.6"
TRAJ: 75 m. zero	-.8"	3.0"	3.2"	0.0"	-7.0"	-17.5"
TRAJ: 100 m. zero	-.8"	4.8"	6.8"	5.3"	0.0"	-8.7"
TRAJ: 125 m. zero	-.8"	6.5"	10.3"	10.5"	7.0"	0.0"
VELOCITY (fps)	850	827	805	785	764	745
ENERGY (ft. lbs.)	254	240	227	216	205	195
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-9.7"	-21.3"	-36.5"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.1"	-15.2"	-28.8"
TRAJ: 75 m. zero	-.8"	3.3"	3.4"	0.0"	-8.3"	-20.2"
TRAJ: 100 m. zero	-.8"	5.3"	7.6"	6.3"	0.0"	-9.8"
TRAJ: 125 m. zero	-.8"	7.3"	11.5"	12.2"	7.9"	0.0"
VELOCITY (fps)	800	780	760	740	721	703
ENERGY (ft. lbs.)	225	214	203	192	182	173
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.6"	-24.4"	-41.6"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.4"	-17.4"	-32.8"
TRAJ: 75 m. zero	-.8"	3.9"	4.3"	0.0"	-8.8"	-22.1"
TRAJ: 100 m. zero	-.8"	6.1"	8.7"	6.6"	0.0"	-11.0"
TRAJ: 125 m. zero	-.8"	8.3"	13.2"	13.3"	8.9"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	750	731	712	694	676	658
ENERGY (ft. lbs.)	197	188	178	169	160	152
TRAJ: 25 m. zero	-.8"	0.0"	-4.1"	-13.1"	-27.7"	-48.4"
TRAJ: 50 m. zero	-.8"	2.1"	0.0"	-6.9"	-19.4"	-38.0"
TRAJ: 75 m. zero	-.8"	4.4"	4.6"	0.0"	-10.1"	-26.5"
TRAJ: 100 m. zero	-.8"	6.9"	9.7"	7.6"	0.0"	-13.8"
TRAJ: 125 m. zero	-.8"	9.7"	15.2"	15.9"	11.1"	0.0"
VELOCITY (fps)	700	682	665	647	631	614
ENERGY (ft. lbs.)	172	163	155	147	140	132
TRAJ: 25 m. zero	-.8"	0.0"	-4.5"	-15.5"	-31.6"	-55.6"
TRAJ: 50 m. zero	-.8"	2.3"	0.0"	-8.8"	-22.6"	-44.3"
TRAJ: 75 m. zero	-.8"	5.2"	5.9"	0.0"	-10.8"	-29.6"
TRAJ: 100 m. zero	-.8"	7.9"	11.3"	8.2"	0.0"	-16.0"
TRAJ: 125 m. zero	-.8"	11.1"	17.7"	17.8"	12.8"	0.0"

**38 Caliber (.357" Dia.) 158 GRAIN JACKETED FLAT POINT**

SECTIONAL DENSITY: .177 BALLISTIC COEFFICIENT: .153

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1306	1223	1154	1098	1052
ENERGY (ft. lbs.)	688	599	525	467	423	388
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.6"	-14.0"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.0"	-6.1"	-12.1"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.3"	-8.6"
TRAJ: 100 m. zero	-.8"	1.9"	3.1"	2.5"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.8"	4.9"	5.2"	3.6"	0.0"
VELOCITY (fps)	1300	1218	1150	1095	1049	1010
ENERGY (ft. lbs.)	593	521	464	421	386	358
TRAJ: 25 m. zero	-.8"	0.0"	-.9"	-3.9"	-8.9"	-16.2"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-6.9"	-13.7"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.7"	-9.7"
TRAJ: 100 m. zero	-.8"	2.2"	3.5"	2.8"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.8"	4.0"	0.0"
VELOCITY (fps)	1200	1136	1084	1040	1002	969
ENERGY (ft. lbs.)	505	453	412	380	352	330
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.3"	-18.6"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.7"	-7.9"	-15.5"
TRAJ: 75 m. zero	-.8"	1.5"	1.9"	0.0"	-4.2"	-10.9"
TRAJ: 100 m. zero	-.8"	2.6"	4.0"	3.2"	0.0"	-5.6"
TRAJ: 125 m. zero	-.8"	3.7"	6.2"	6.6"	4.5"	0.0"
VELOCITY (fps)	1100	1054	1014	980	949	920
ENERGY (ft. lbs.)	425	390	361	337	316	297
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.5"	-12.3"	-22.0"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.1"	-18.0"
TRAJ: 75 m. zero	-.8"	1.9"	2.1"	0.0"	-4.9"	-12.6"
TRAJ: 100 m. zero	-.8"	3.1"	4.6"	3.7"	0.0"	-6.5"
TRAJ: 125 m. zero	-.8"	4.4"	7.2"	7.6"	5.2"	0.0"
VELOCITY (fps)	1050	1011	977	947	918	891
ENERGY (ft. lbs.)	387	359	335	315	296	279
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.1"	-13.5"	-23.8"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.4"	-10.0"	-19.4"
TRAJ: 75 m. zero	-.8"	2.0"	2.3"	0.0"	-5.3"	-13.6"
TRAJ: 100 m. zero	-.8"	3.4"	5.0"	4.0"	0.0"	-6.9"
TRAJ: 125 m. zero	-.8"	4.8"	7.8"	8.2"	5.6"	0.0"
VELOCITY (fps)	1000	968	938	910	883	858
ENERGY (ft. lbs.)	351	329	309	291	274	258
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.9"	-15.1"	-26.4"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.0"	-21.4"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.8"	-14.9"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.4"	0.0"	-7.5"
TRAJ: 125 m. zero	-.8"	5.3"	8.6"	8.9"	6.0"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	950	922	894	869	844	821
ENERGY (ft. lbs.)	317	298	280	265	250	237
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-7.8"	-17.0"	-29.6"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.1"	-12.1"	-23.5"
TRAJ: 75 m. zero	-.8"	2.8"	2.8"	0.0"	-6.5"	-16.5"
TRAJ: 100 m. zero	-.8"	4.3"	6.1"	4.9"	0.0"	-8.3"
TRAJ: 125 m. zero	-.8"	5.9"	9.4"	9.9"	6.7"	0.0"
VELOCITY (fps)	900	874	850	826	804	783
ENERGY (ft. lbs.)	284	268	254	239	227	215
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.8"	-18.8"	-32.7"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.1"	-13.7"	-26.4"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-6.9"	-17.9"
TRAJ: 100 m. zero	-.8"	4.7"	6.9"	5.2"	0.0"	-9.2"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	10.8"	7.4"	0.0"
VELOCITY (fps)	850	827	805	784	763	744
ENERGY (ft. lbs.)	254	240	227	216	204	194
TRAJ: 25 m. zero	-.8"	0.0"	-2.9"	-9.9"	-21.5"	-36.5"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.4"	-15.5"	-29.0"
TRAJ: 75 m. zero	-.8"	3.3"	3.6"	0.0"	-8.2"	-19.9"
TRAJ: 100 m. zero	-.8"	5.4"	7.8"	6.2"	0.0"	-9.6"
TRAJ: 125 m. zero	-.8"	7.3"	11.6"	12.0"	7.8"	0.0"
VELOCITY (fps)	800	780	759	740	720	701
ENERGY (ft. lbs.)	225	214	202	192	182	172
TRAJ: 25 m. zero	-.8"	0.0"	-3.7"	-11.4"	-24.8"	-42.8"
TRAJ: 50 m. zero	-.8"	1.9"	0.0"	-5.8"	-17.2"	-33.3"
TRAJ: 75 m. zero	-.8"	3.8"	3.9"	0.0"	-9.3"	-23.5"
TRAJ: 100 m. zero	-.8"	6.2"	8.6"	7.0"	0.0"	-11.8"
TRAJ: 125 m. zero	-.8"	8.5"	13.3"	14.1"	9.5"	0.0"
VELOCITY (fps)	750	731	712	693	675	657
ENERGY (ft. lbs.)	197	188	178	169	160	151
TRAJ: 25 m. zero	-.8"	0.0"	-4.0"	-13.4"	-28.0"	-48.6"
TRAJ: 50 m. zero	-.8"	2.0"	0.0"	-7.3"	-19.8"	-38.5"
TRAJ: 75 m. zero	-.8"	4.5"	4.9"	0.0"	-10.0"	-26.1"
TRAJ: 100 m. zero	-.8"	7.0"	9.9"	7.5"	0.0"	-13.6"
TRAJ: 125 m. zero	-.8"	9.7"	15.4"	15.7"	10.9"	0.0"
VELOCITY (fps)	700	682	664	647	630	613
ENERGY (ft. lbs.)	172	163	155	147	139	132
TRAJ: 25 m. zero	-.8"	0.0"	-4.8"	-15.2"	-32.0"	-55.9"
TRAJ: 50 m. zero	-.8"	2.4"	0.0"	-7.9"	-22.3"	-43.7"
TRAJ: 75 m. zero	-.8"	5.1"	5.3"	0.0"	-11.8"	-30.4"
TRAJ: 100 m. zero	-.8"	8.0"	11.2"	8.8"	0.0"	-15.8"
TRAJ: 125 m. zero	-.8"	11.2"	17.5"	18.3"	12.7"	0.0"

### 38 Caliber (.357" Dia.) 160 GRAIN FULL METAL JACKETED FLAT POINT

SECTIONAL DENSITY: .179 BALLISTIC COEFFICIENT: .151

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1305	1221	1152	1096	1049
ENERGY (ft. lbs.)	697	605	530	472	427	391
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.6"	-14.1"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.0"	-6.0"	-12.2"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.3"	-8.7"
TRAJ: 100 m. zero	-.8"	1.9"	3.0"	2.5"	0.0"	-4.6"
TRAJ: 125 m. zero	-.8"	2.8"	4.9"	5.3"	3.7"	0.0"
VELOCITY (fps)	1300	1217	1149	1093	1047	1008
ENERGY (ft. lbs.)	601	526	469	425	390	361
TRAJ: 25 m. zero	-.8"	0.0"	-.9"	-3.9"	-8.9"	-16.2"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-7.0"	-13.7"
TRAJ: 75 m. zero	-.8"	1.3"	1.7"	0.0"	-3.7"	-9.6"
TRAJ: 100 m. zero	-.8"	2.2"	3.5"	2.8"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.8"	4.0"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1200	1135	1082	1038	1000	967
ENERGY (ft. lbs.)	512	458	416	383	355	332
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.4"	-18.6"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-2.7"	-7.9"	-15.5"
TRAJ: 75 m. zero	-.8"	1.6"	1.8"	0.0"	-4.2"	-10.8"
TRAJ: 100 m. zero	-.8"	2.6"	4.0"	3.2"	0.0"	-5.6"
TRAJ: 125 m. zero	-.8"	3.7"	6.2"	6.5"	4.5"	0.0"
VELOCITY (fps)	1100	1053	1013	978	947	918
ENERGY (ft. lbs.)	430	394	365	340	319	299
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.4"	-22.0"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.3"	-18.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-4.8"	-12.5"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.7"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.4"	7.2"	7.6"	5.2"	0.0"
VELOCITY (fps)	1050	1011	976	945	916	889
ENERGY (ft. lbs.)	392	363	339	317	298	281
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.3"	-13.7"	-24.1"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.6"	-10.1"	-19.5"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.2"	-13.5"
TRAJ: 100 m. zero	-.8"	3.4"	5.1"	4.0"	0.0"	-6.9"
TRAJ: 125 m. zero	-.8"	4.8"	7.8"	8.1"	5.5"	0.0"
VELOCITY (fps)	1000	967	937	909	882	856
ENERGY (ft. lbs.)	355	332	312	294	276	260
TRAJ: 25 m. zero	-.8"	0.0"	-1.9"	-6.8"	-14.9"	-26.5"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.8"	-10.9"	-21.5"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.7"	-15.1"
TRAJ: 100 m. zero	-.8"	3.7"	5.5"	4.3"	0.0"	-7.9"
TRAJ: 125 m. zero	-.8"	5.3"	8.6"	9.1"	6.3"	0.0"
VELOCITY (fps)	950	921	894	868	843	820
ENERGY (ft. lbs.)	321	301	284	268	253	239
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.7"	-16.7"	-29.2"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.3"	-12.3"	-23.8"
TRAJ: 75 m. zero	-.8"	2.6"	2.9"	0.0"	-6.5"	-16.3"
TRAJ: 100 m. zero	-.8"	4.2"	6.2"	4.9"	0.0"	-8.2"
TRAJ: 125 m. zero	-.8"	5.8"	9.5"	9.8"	6.8"	0.0"
VELOCITY (fps)	900	874	849	826	803	782
ENERGY (ft. lbs.)	288	271	256	242	229	217
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-8.6"	-18.9"	-32.7"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.7"	-13.6"	-26.1"
TRAJ: 75 m. zero	-.8"	2.9"	3.1"	0.0"	-7.3"	-18.2"
TRAJ: 100 m. zero	-.8"	4.7"	6.8"	5.5"	0.0"	-9.1"
TRAJ: 125 m. zero	-.8"	6.6"	10.5"	11.0"	7.3"	0.0"
VELOCITY (fps)	850	827	804	783	762	742
ENERGY (ft. lbs.)	257	243	230	218	206	196
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-10.1"	-21.6"	-37.3"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.4"	-15.3"	-29.4"
TRAJ: 75 m. zero	-.8"	3.4"	3.6"	0.0"	-8.1"	-20.4"
TRAJ: 100 m. zero	-.8"	5.4"	7.7"	6.1"	0.0"	-10.3"
TRAJ: 125 m. zero	-.8"	7.5"	11.8"	12.3"	8.2"	0.0"
VELOCITY (fps)	800	779	759	739	719	700
ENERGY (ft. lbs.)	227	216	205	194	184	174
TRAJ: 25 m. zero	-.8"	0.0"	-3.3"	-11.2"	-24.2"	-42.0"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.2"	-17.5"	-33.6"
TRAJ: 75 m. zero	-.8"	3.8"	4.2"	0.0"	-9.2"	-23.2"
TRAJ: 100 m. zero	-.8"	6.1"	8.8"	6.9"	0.0"	-11.6"
TRAJ: 125 m. zero	-.8"	8.4"	13.5"	13.9"	9.3"	0.0"
VELOCITY (fps)	750	731	711	693	674	656
ENERGY (ft. lbs.)	200	190	180	171	161	153
TRAJ: 25 m. zero	-.8"	0.0"	-4.3"	-13.2"	-28.3"	-48.8"
TRAJ: 50 m. zero	-.8"	2.2"	0.0"	-6.7"	-19.6"	-37.9"
TRAJ: 75 m. zero	-.8"	4.4"	4.5"	0.0"	-10.6"	-26.8"
TRAJ: 100 m. zero	-.8"	7.1"	9.8"	8.0"	0.0"	-13.4"
TRAJ: 125 m. zero	-.8"	9.8"	15.2"	16.1"	10.8"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	700	682	664	646	629	612
ENERGY (ft. lbs.)	174	165	157	148	141	133
TRAJ: 25 m. zero	-.8"	0.0"	-4.7"	-15.7"	-32.4"	-56.2"
TRAJ: 50 m. zero	-.8"	2.4"	0.0"	-8.5"	-22.9"	-44.3"
TRAJ: 75 m. zero	-.8"	5.2"	5.7"	0.0"	-11.5"	-30.0"
TRAJ: 100 m. zero	-.8"	8.1"	11.5"	8.7"	0.0"	-15.6"
TRAJ: 125 m. zero	-.8"	11.3"	17.7"	18.0"	12.5"	0.0"

### 38 Caliber (.358" Dia.) 148 GRAIN HOLLOW BASE WADCUTTER

SECTIONAL DENSITY: .165 BALLISTIC COEFFICIENT: .039

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1000	888	798	722	653	591
ENERGY (ft. lbs.)	329	259	209	171	140	115
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-9.0"	-20.4"	-37.7"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.2"	-15.4"	-31.3"
TRAJ: 75 m. zero	-.8"	3.0"	3.5"	0.0"	-8.3"	-22.6"
TRAJ: 100 m. zero	-.8"	5.1"	7.7"	6.3"	0.0"	-12.1"
TRAJ: 125 m. zero	-.8"	7.5"	12.6"	13.6"	9.7"	0.0"
VELOCITY (fps)	950	849	766	693	627	568
ENERGY (ft. lbs.)	297	237	193	158	129	106
TRAJ: 25 m. zero	-.8"	0.0"	-2.8"	-10.0"	-22.5"	-41.2"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.7"	-16.8"	-34.1"
TRAJ: 75 m. zero	-.8"	3.4"	3.9"	0.0"	-9.1"	-24.4"
TRAJ: 100 m. zero	-.8"	5.6"	8.4"	6.9"	0.0"	-13.0"
TRAJ: 125 m. zero	-.8"	8.2"	13.7"	14.7"	10.4"	0.0"
VELOCITY (fps)	900	808	732	662	599	542
ENERGY (ft. lbs.)	266	215	176	144	118	97
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-11.1"	-24.9"	-45.8"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-6.4"	-18.6"	-37.9"
TRAJ: 75 m. zero	-.8"	3.7"	4.3"	0.0"	-10.1"	-27.2"
TRAJ: 100 m. zero	-.8"	6.2"	9.3"	7.6"	0.0"	-14.6"
TRAJ: 125 m. zero	-.8"	9.2"	15.2"	16.3"	11.7"	0.0"
VELOCITY (fps)	850	768	695	629	569	514
ENERGY (ft. lbs.)	237	194	159	130	106	87
TRAJ: 25 m. zero	-.8"	0.0"	-3.6"	-12.5"	-28.0"	-51.6"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-7.1"	-20.7"	-42.5"
TRAJ: 75 m. zero	-.8"	4.2"	4.7"	0.0"	-11.2"	-30.7"
TRAJ: 100 m. zero	-.8"	7.0"	10.4"	8.5"	0.0"	-16.6"
TRAJ: 125 m. zero	-.8"	10.3"	17.0"	18.4"	13.3"	0.0"
VELOCITY (fps)	800	724	656	593	537	485
ENERGY (ft. lbs.)	210	172	141	116	95	77
TRAJ: 25 m. zero	-.8"	0.0"	-4.0"	-14.3"	-31.6"	-58.3"
TRAJ: 50 m. zero	-.8"	2.0"	0.0"	-8.2"	-23.4"	-48.0"
TRAJ: 75 m. zero	-.8"	4.8"	5.5"	0.0"	-12.5"	-34.3"
TRAJ: 100 m. zero	-.8"	7.9"	11.7"	9.4"	0.0"	-18.7"
TRAJ: 125 m. zero	-.8"	11.7"	19.2"	20.6"	15.0"	0.0"
VELOCITY (fps)	750	679	615	556	503	455
ENERGY (ft. lbs.)	185	152	124	102	83	68
TRAJ: 25 m. zero	-.8"	0.0"	-4.8"	-16.5"	-36.5"	-66.5"
TRAJ: 50 m. zero	-.8"	2.4"	0.0"	-9.3"	-26.9"	-54.5"
TRAJ: 75 m. zero	-.8"	5.5"	6.2"	0.0"	-14.4"	-38.9"
TRAJ: 100 m. zero	-.8"	9.1"	13.5"	10.9"	0.0"	-20.8"
TRAJ: 125 m. zero	-.8"	13.3"	21.8"	23.4"	16.7"	0.0"
VELOCITY (fps)	700	634	574	519	469	424
ENERGY (ft. lbs.)	161	132	108	89	72	59
TRAJ: 25 m. zero	-.8"	0.0"	-5.6"	-19.2"	-42.5"	-77.3"
TRAJ: 50 m. zero	-.8"	2.8"	0.0"	-10.7"	-31.2"	-63.1"
TRAJ: 75 m. zero	-.8"	6.4"	7.2"	0.0"	-16.8"	-45.2"
TRAJ: 100 m. zero	-.8"	10.6"	15.6"	12.7"	0.0"	-24.1"
TRAJ: 125 m. zero	-.8"	15.5"	25.3"	27.1"	19.3"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	650	589	533	482	436	394
ENERGY (ft. lbs.)	139	114	93	76	62	51
TRAJ: 25 m. zero	-.8"	0.0"	-6.7"	-22.5"	-49.3"	-89.7"
TRAJ: 50 m. zero	-.8"	3.4"	0.0"	-12.4"	-35.9"	-73.0"
TRAJ: 75 m. zero	-.8"	7.5"	8.3"	0.0"	-19.2"	-52.1"
TRAJ: 100 m. zero	-.8"	12.3"	18.0"	14.5"	0.0"	-28.0"
TRAJ: 125 m. zero	-.8"	18.0"	29.2"	31.3"	22.5"	0.0"
VELOCITY (fps)	600	543	491	444	402	363
ENERGY (ft. lbs.)	118	97	79	65	53	43
TRAJ: 25 m. zero	-.8"	0.0"	-8.0"	-26.8"	-58.2"	-106.0"
TRAJ: 50 m. zero	-.8"	4.0"	0.0"	-14.7"	-42.0"	-85.8"
TRAJ: 75 m. zero	-.8"	9.0"	9.8"	0.0"	-22.3"	-61.2"
TRAJ: 100 m. zero	-.8"	14.6"	21.0"	16.8"	0.0"	-33.2"
TRAJ: 125 m. zero	-.8"	21.2"	34.3"	36.8"	26.6"	0.0"

**38 Caliber (.358" Dia.) 148 GRAIN BEVEL BASE WADCUTTER**

SECTIONAL DENSITY: .165 BALLISTIC COEFFICIENT: .063

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1000	927	864	809	760	714
ENERGY (ft. lbs.)	329	282	245	215	190	168
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.9"	-17.5"	-31.5"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.5"	-13.0"	-25.8"
TRAJ: 75 m. zero	-.8"	2.7"	3.0"	0.0"	-6.9"	-18.2"
TRAJ: 100 m. zero	-.8"	4.4"	6.5"	5.2"	0.0"	-9.6"
TRAJ: 125 m. zero	-.8"	6.3"	10.4"	11.0"	7.7"	0.0"
VELOCITY (fps)	950	884	827	776	729	685
ENERGY (ft. lbs.)	297	257	225	198	175	154
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.8"	-19.4"	-34.8"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.0"	-14.4"	-28.5"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.6"	-20.0"
TRAJ: 100 m. zero	-.8"	4.9"	7.2"	5.7"	0.0"	-10.4"
TRAJ: 125 m. zero	-.8"	7.0"	11.4"	12.0"	8.4"	0.0"
VELOCITY (fps)	900	841	789	741	696	654
ENERGY (ft. lbs.)	266	232	205	180	159	141
TRAJ: 25 m. zero	-.8"	0.0"	-2.8"	-9.9"	-21.7"	-38.7"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.6"	-16.0"	-31.6"
TRAJ: 75 m. zero	-.8"	3.3"	3.8"	0.0"	-8.4"	-22.1"
TRAJ: 100 m. zero	-.8"	5.4"	8.0"	6.4"	0.0"	-11.5"
TRAJ: 125 m. zero	-.8"	7.8"	12.6"	13.3"	9.2"	0.0"
VELOCITY (fps)	850	797	749	704	661	621
ENERGY (ft. lbs.)	237	209	184	163	144	127
TRAJ: 25 m. zero	-.8"	0.0"	-3.3"	-11.1"	-24.4"	-43.4"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.2"	-17.8"	-35.1"
TRAJ: 75 m. zero	-.8"	3.7"	4.1"	0.0"	-9.5"	-24.8"
TRAJ: 100 m. zero	-.8"	6.1"	8.9"	7.1"	0.0"	-12.9"
TRAJ: 125 m. zero	-.8"	8.7"	14.1"	14.9"	10.3"	0.0"
VELOCITY (fps)	800	752	707	664	624	586
ENERGY (ft. lbs.)	210	186	164	145	128	113
TRAJ: 25 m. zero	-.8"	0.0"	-3.7"	-12.8"	-27.6"	-49.1"
TRAJ: 50 m. zero	-.8"	1.9"	0.0"	-7.1"	-20.0"	-39.7"
TRAJ: 75 m. zero	-.8"	4.3"	4.8"	0.0"	-10.5"	-27.7"
TRAJ: 100 m. zero	-.8"	6.9"	10.0"	7.9"	0.0"	-14.6"
TRAJ: 125 m. zero	-.8"	9.8"	15.9"	16.7"	11.7"	0.0"
VELOCITY (fps)	750	705	663	622	585	549
ENERGY (ft. lbs.)	185	163	144	127	112	99
TRAJ: 25 m. zero	-.8"	0.0"	-4.3"	-14.9"	-31.6"	-56.4"
TRAJ: 50 m. zero	-.8"	2.2"	0.0"	-8.3"	-22.9"	-45.5"
TRAJ: 75 m. zero	-.8"	5.0"	5.6"	0.0"	-11.7"	-31.5"
TRAJ: 100 m. zero	-.8"	7.9"	11.5"	8.8"	0.0"	-16.8"
TRAJ: 125 m. zero	-.8"	11.3"	18.2"	18.9"	13.5"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	700	658	618	581	546	512
ENERGY (ft. lbs.)	161	142	126	111	98	86
TRAJ: 25 m. zero	-.8"	0.0"	-5.2"	-17.1"	-36.5"	-65.3"
TRAJ: 50 m. zero	-.8"	2.6"	0.0"	-9.2"	-26.0"	-52.2"
TRAJ: 75 m. zero	-.8"	5.7"	6.1"	0.0"	-13.7"	-36.8"
TRAJ: 100 m. zero	-.8"	9.1"	13.0"	10.3"	0.0"	-19.6"
TRAJ: 125 m. zero	-.8"	13.1"	20.9"	22.1"	15.7"	0.0"
VELOCITY (fps)	650	611	574	539	506	475
ENERGY (ft. lbs.)	139	123	108	95	84	74
TRAJ: 25 m. zero	-.8"	0.0"	-6.1"	-20.2"	-43.3"	-76.5"
TRAJ: 50 m. zero	-.8"	3.1"	0.0"	-11.0"	-30.9"	-61.0"
TRAJ: 75 m. zero	-.8"	6.8"	7.3"	0.0"	-16.3"	-42.7"
TRAJ: 100 m. zero	-.8"	10.8"	15.5"	12.2"	0.0"	-22.3"
TRAJ: 125 m. zero	-.8"	15.3"	24.4"	25.6"	17.9"	0.0"
VELOCITY (fps)	600	564	530	498	467	439
ENERGY (ft. lbs.)	118	105	92	82	72	63
TRAJ: 25 m. zero	-.8"	0.0"	-7.2"	-23.6"	-51.1"	-89.2"
TRAJ: 50 m. zero	-.8"	3.6"	0.0"	-12.7"	-36.5"	-71.0"
TRAJ: 75 m. zero	-.8"	7.9"	8.5"	0.0"	-19.5"	-49.7"
TRAJ: 100 m. zero	-.8"	12.8"	18.3"	14.7"	0.0"	-25.3"
TRAJ: 125 m. zero	-.8"	17.8"	28.4"	29.9"	20.3"	0.0"

### 38 Caliber (.358" Dia.) 158 GRAIN LEAD ROUND NOSE

SECTIONAL DENSITY: .176 BALLISTIC COEFFICIENT: .141

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1050	1008	972	939	909
ENERGY (ft. lbs.)	425	387	357	332	309	290
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.5"	-22.0"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.3"	-18.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.0"	-12.7"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.8"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.4"	7.3"	7.6"	5.1"	0.0"
VELOCITY (fps)	1050	1008	972	939	909	880
ENERGY (ft. lbs.)	387	357	332	309	290	272
TRAJ: 25 m. zero	-.8"	0.0"	-1.7"	-6.3"	-13.6"	-24.2"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.7"	-10.1"	-19.9"
TRAJ: 75 m. zero	-.8"	2.1"	2.5"	0.0"	-5.2"	-13.7"
TRAJ: 100 m. zero	-.8"	3.4"	5.1"	3.9"	0.0"	-7.2"
TRAJ: 125 m. zero	-.8"	4.9"	8.0"	8.2"	5.8"	0.0"
VELOCITY (fps)	1000	965	933	903	875	848
ENERGY (ft. lbs.)	351	327	305	286	269	252
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.9"	-15.0"	-26.6"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.0"	-21.6"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.7"	-15.0"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.3"	0.0"	-7.8"
TRAJ: 125 m. zero	-.8"	5.3"	8.7"	9.0"	6.3"	0.0"
VELOCITY (fps)	950	919	890	863	837	812
ENERGY (ft. lbs.)	317	296	278	261	246	231
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.7"	-16.7"	-29.6"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.2"	-12.1"	-23.9"
TRAJ: 75 m. zero	-.8"	2.6"	2.9"	0.0"	-6.4"	-16.7"
TRAJ: 100 m. zero	-.8"	4.2"	6.1"	4.8"	0.0"	-8.7"
TRAJ: 125 m. zero	-.8"	5.9"	9.6"	10.1"	7.0"	0.0"
VELOCITY (fps)	900	872	846	821	797	775
ENERGY (ft. lbs.)	284	267	251	237	223	211
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.7"	-19.0"	-32.9"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.9"	-13.8"	-26.5"
TRAJ: 75 m. zero	-.8"	2.9"	3.3"	0.0"	-7.2"	-18.2"
TRAJ: 100 m. zero	-.8"	4.8"	6.9"	5.5"	0.0"	-9.1"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	11.0"	7.3"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	850	825	801	779	757	736
ENERGY (ft. lbs.)	254	239	225	213	201	190
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-9.9"	-21.3"	-36.9"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.3"	-15.1"	-29.1"
TRAJ: 75 m. zero	-.8"	3.3"	3.6"	0.0"	-8.0"	-20.2"
TRAJ: 100 m. zero	-.8"	5.3"	7.6"	6.0"	0.0"	-10.2"
TRAJ: 125 m. zero	-.8"	7.4"	11.7"	12.2"	8.2"	0.0"
VELOCITY (fps)	800	778	756	735	714	694
ENERGY (ft. lbs.)	225	212	201	190	179	169
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-11.5"	-24.5"	-42.3"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.1"	-17.4"	-33.4"
TRAJ: 75 m. zero	-.8"	3.8"	4.1"	0.0"	-9.1"	-23.1"
TRAJ: 100 m. zero	-.8"	6.1"	8.7"	6.9"	0.0"	-11.6"
TRAJ: 125 m. zero	-.8"	8.5"	13.4"	13.9"	9.4"	0.0"
VELOCITY (fps)	750	729	709	689	669	650
ENERGY (ft. lbs.)	197	186	176	167	157	148
TRAJ: 25 m. zero	-.8"	0.0"	-3.9"	-13.1"	-28.1"	-48.7"
TRAJ: 50 m. zero	-.8"	2.0"	0.0"	-7.2"	-20.2"	-38.8"
TRAJ: 75 m. zero	-.8"	4.4"	4.8"	0.0"	-10.6"	-26.8"
TRAJ: 100 m. zero	-.8"	7.0"	10.1"	8.0"	0.0"	-13.5"
TRAJ: 125 m. zero	-.8"	9.7"	15.6"	16.1"	10.8"	0.0"
VELOCITY (fps)	700	681	661	643	624	607
ENERGY (ft. lbs.)	172	163	153	145	137	129
TRAJ: 25 m. zero	-.8"	0.0"	-5.1"	-15.5"	-33.3"	-56.2"
TRAJ: 50 m. zero	-.8"	2.6"	0.0"	-7.8"	-23.0"	-43.3"
TRAJ: 75 m. zero	-.8"	5.2"	5.2"	0.0"	-12.5"	-30.2"
TRAJ: 100 m. zero	-.8"	8.3"	11.5"	9.4"	0.0"	-14.5"
TRAJ: 125 m. zero	-.8"	11.2"	17.4"	18.2"	11.7"	0.0"

**38 Caliber (.358" Dia.) 158 GRAIN LEAD SEMI-WADCUTTER**

SECTIONAL DENSITY: .176 BALLISTIC COEFFICIENT: .129

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1046	1001	963	928	895
ENERGY (ft. lbs.)	425	384	352	325	302	281
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.6"	-22.6"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.4"	-18.6"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.0"	-13.2"
TRAJ: 100 m. zero	-.8"	3.2"	4.7"	3.8"	0.0"	-6.8"
TRAJ: 125 m. zero	-.8"	4.5"	7.5"	7.9"	5.5"	0.0"
VELOCITY (fps)	1050	1005	966	931	898	868
ENERGY (ft. lbs.)	387	354	327	304	283	264
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.3"	-14.0"	-24.5"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.6"	-10.4"	-20.0"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.5"	-13.9"
TRAJ: 100 m. zero	-.8"	3.5"	5.2"	4.1"	0.0"	-7.0"
TRAJ: 125 m. zero	-.8"	4.9"	8.0"	8.4"	5.7"	0.0"
VELOCITY (fps)	1000	962	927	895	865	837
ENERGY (ft. lbs.)	351	325	302	281	263	246
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-7.0"	-15.2"	-26.8"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.1"	-21.6"
TRAJ: 75 m. zero	-.8"	2.4"	2.6"	0.0"	-5.8"	-15.0"
TRAJ: 100 m. zero	-.8"	3.8"	5.6"	4.4"	0.0"	-7.7"
TRAJ: 125 m. zero	-.8"	5.4"	8.7"	9.0"	6.2"	0.0"
VELOCITY (fps)	950	917	885	855	828	802
ENERGY (ft. lbs.)	317	295	275	257	241	226
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-8.1"	-17.1"	-29.9"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.5"	-12.3"	-24.0"
TRAJ: 75 m. zero	-.8"	2.7"	3.0"	0.0"	-6.2"	-16.4"
TRAJ: 100 m. zero	-.8"	4.3"	6.2"	4.7"	0.0"	-8.5"
TRAJ: 125 m. zero	-.8"	6.0"	9.6"	9.8"	6.9"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	900	870	841	814	789	765
ENERGY (ft. lbs.)	284	266	248	233	218	205
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.1"	-19.3"	-33.6"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.0"	-13.8"	-26.7"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.1"	-18.3"
TRAJ: 100 m. zero	-.8"	4.8"	6.9"	5.3"	0.0"	-9.4"
TRAJ: 125 m. zero	-.8"	6.7"	10.7"	11.0"	7.6"	0.0"
VELOCITY (fps)	850	823	797	773	749	726
ENERGY (ft. lbs.)	254	238	223	210	197	185
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-10.1"	-21.7"	-37.9"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.4"	-15.5"	-30.1"
TRAJ: 75 m. zero	-.8"	3.4"	3.7"	0.0"	-8.2"	-21.0"
TRAJ: 100 m. zero	-.8"	5.4"	7.8"	6.2"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.6"	12.1"	12.6"	8.6"	0.0"
VELOCITY (fps)	800	776	752	729	707	685
ENERGY (ft. lbs.)	225	211	198	186	175	165
TRAJ: 25 m. zero	-.8"	0.0"	-3.6"	-11.7"	-24.6"	-43.0"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.3"	-17.3"	-33.9"
TRAJ: 75 m. zero	-.8"	3.9"	4.2"	0.0"	-8.9"	-23.3"
TRAJ: 100 m. zero	-.8"	6.2"	8.7"	6.7"	0.0"	-12.2"
TRAJ: 125 m. zero	-.8"	8.6"	13.6"	14.0"	9.8"	0.0"
VELOCITY (fps)	750	728	705	684	663	642
ENERGY (ft. lbs.)	197	186	174	164	154	145
TRAJ: 25 m. zero	-.8"	0.0"	-4.3"	-13.4"	-28.3"	-49.6"
TRAJ: 50 m. zero	-.8"	2.2"	0.0"	-6.9"	-19.6"	-38.8"
TRAJ: 75 m. zero	-.8"	4.5"	4.6"	0.0"	-10.3"	-27.2"
TRAJ: 100 m. zero	-.8"	7.1"	9.8"	7.8"	0.0"	-14.2"
TRAJ: 125 m. zero	-.8"	9.9"	15.5"	16.3"	11.4"	0.0"
VELOCITY (fps)	700	679	658	638	618	599
ENERGY (ft. lbs.)	172	162	152	143	134	126
TRAJ: 25 m. zero	-.8"	0.0"	-4.9"	-15.6"	-33.0"	-57.0"
TRAJ: 50 m. zero	-.8"	2.5"	0.0"	-8.2"	-23.2"	-44.7"
TRAJ: 75 m. zero	-.8"	5.2"	5.5"	0.0"	-12.2"	-30.9"
TRAJ: 100 m. zero	-.8"	8.3"	11.6"	9.2"	0.0"	-15.6"
TRAJ: 125 m. zero	-.8"	11.4"	17.9"	18.6"	12.5"	0.0"

#### 41 Caliber (.410" Dia.) 210 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .178 BALLISTIC COEFFICIENT: .141

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1600	1482	1371	1273	1189	1122
ENERGY (ft. lbs.)	1194	1024	877	756	659	587
TRAJ: 25 m. zero	-.8"	0.0"	-.4"	-2.2"	-5.6"	-10.7"
TRAJ: 50 m. zero	-.8"	.2"	0.0"	-1.5"	-4.7"	-9.6"
TRAJ: 75 m. zero	-.8"	.7"	1.1"	0.0"	-2.6"	-7.0"
TRAJ: 100 m. zero	-.8"	1.4"	2.4"	2.0"	0.0"	-3.7"
TRAJ: 125 m. zero	-.8"	2.2"	3.9"	4.2"	3.0"	0.0"
VELOCITY (fps)	1500	1389	1288	1202	1132	1076
ENERGY (ft. lbs.)	1049	900	774	674	598	540
TRAJ: 25 m. zero	-.8"	0.0"	-.6"	-2.7"	-6.6"	-12.4"
TRAJ: 50 m. zero	-.8"	.3"	0.0"	-1.8"	-5.4"	-10.9"
TRAJ: 75 m. zero	-.8"	.9"	1.2"	0.0"	-3.0"	-7.9"
TRAJ: 100 m. zero	-.8"	1.7"	2.7"	2.3"	0.0"	-4.1"
TRAJ: 125 m. zero	-.8"	2.5"	4.4"	4.8"	3.4"	0.0"
VELOCITY (fps)	1400	1298	1210	1139	1082	1035
ENERGY (ft. lbs.)	914	786	683	605	546	500
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.7"	-14.2"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.1"	-6.1"	-12.3"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.3"	-8.8"
TRAJ: 100 m. zero	-.8"	1.9"	3.1"	2.5"	0.0"	-4.5"
TRAJ: 125 m. zero	-.8"	2.9"	4.9"	5.3"	3.7"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1300	1212	1140	1083	1036	996
ENERGY (ft. lbs.)	788	685	606	547	501	463
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-3.9"	-9.0"	-16.4"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-7.0"	-13.8"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.7"	-9.7"
TRAJ: 100 m. zero	-.8"	2.3"	3.5"	2.8"	0.0"	-5.1"
TRAJ: 125 m. zero	-.8"	3.3"	5.5"	5.9"	4.1"	0.0"
VELOCITY (fps)	1200	1131	1076	1030	990	956
ENERGY (ft. lbs.)	672	597	540	495	457	426
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.6"	-18.9"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.8"	-8.1"	-15.9"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.3"	-11.2"
TRAJ: 100 m. zero	-.8"	2.7"	4.1"	3.3"	0.0"	-5.7"
TRAJ: 125 m. zero	-.8"	3.8"	6.4"	6.7"	4.6"	0.0"
VELOCITY (fps)	1100	1050	1008	972	939	909
ENERGY (ft. lbs.)	564	514	474	441	411	385
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.5"	-22.0"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.3"	-18.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.0"	-12.7"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.8"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.4"	7.3"	7.6"	5.1"	0.0"
VELOCITY (fps)	1000	965	933	903	875	848
ENERGY (ft. lbs.)	466	434	406	380	357	335
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.9"	-15.0"	-26.6"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.0"	-21.6"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.7"	-15.0"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.3"	0.0"	-7.8"
TRAJ: 125 m. zero	-.8"	5.3"	8.7"	9.0"	6.3"	0.0"
VELOCITY (fps)	900	872	846	821	797	775
ENERGY (ft. lbs.)	378	355	334	314	296	280
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.7"	-19.0"	-32.9"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.9"	-13.8"	-26.5"
TRAJ: 75 m. zero	-.8"	2.9"	3.3"	0.0"	-7.2"	-18.2"
TRAJ: 100 m. zero	-.8"	4.8"	6.9"	5.5"	0.0"	-9.1"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	11.0"	7.3"	0.0"

#### 44 Caliber (.430" Dia.) 200 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .155 BALLISTIC COEFFICIENT: .125

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1500	1375	1265	1173	1103	1046
ENERGY (ft. lbs.)	999	840	711	611	540	486
TRAJ: 25 m. zero	-.8"	0.0"	-.6"	-2.8"	-6.8"	-12.9"
TRAJ: 50 m. zero	-.8"	.3"	0.0"	-1.9"	-5.6"	-11.4"
TRAJ: 75 m. zero	-.8"	.9"	1.3"	0.0"	-3.0"	-8.1"
TRAJ: 100 m. zero	-.8"	1.7"	2.8"	2.3"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.6"	4.6"	4.9"	3.5"	0.0"
VELOCITY (fps)	1400	1286	1191	1116	1057	1009
ENERGY (ft. lbs.)	871	735	630	553	496	452
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.3"	-8.0"	-14.7"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.2"	-6.4"	-12.7"
TRAJ: 75 m. zero	-.8"	1.1"	1.5"	0.0"	-3.4"	-9.1"
TRAJ: 100 m. zero	-.8"	2.0"	3.2"	2.6"	0.0"	-4.7"
TRAJ: 125 m. zero	-.8"	3.0"	5.1"	5.5"	3.8"	0.0"
VELOCITY (fps)	1300	1202	1125	1064	1015	973
ENERGY (ft. lbs.)	751	642	562	503	458	421
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-4.0"	-9.2"	-16.9"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.5"	-7.2"	-14.4"
TRAJ: 75 m. zero	-.8"	1.4"	1.7"	0.0"	-3.8"	-10.1"
TRAJ: 100 m. zero	-.8"	2.3"	3.6"	2.9"	0.0"	-5.3"
TRAJ: 125 m. zero	-.8"	3.4"	5.8"	6.1"	4.3"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1200	1124	1063	1014	973	936
ENERGY (ft. lbs.)	640	561	502	457	421	389
TRAJ: 25 m. zero	-.8"	0.0"	-1.3"	-4.8"	-10.7"	-19.5"
TRAJ: 50 m. zero	-.8"	.7"	0.0"	-2.8"	-8.1"	-16.2"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.3"	-11.4"
TRAJ: 100 m. zero	-.8"	2.7"	4.1"	3.2"	0.0"	-6.0"
TRAJ: 125 m. zero	-.8"	3.9"	6.5"	6.9"	4.8"	0.0"
VELOCITY (fps)	1100	1045	998	959	924	891
ENERGY (ft. lbs.)	537	485	442	409	379	353
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-5.8"	-12.7"	-22.6"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.3"	-18.4"
TRAJ: 75 m. zero	-.8"	2.0"	2.2"	0.0"	-4.9"	-13.8"
TRAJ: 100 m. zero	-.8"	3.2"	4.7"	3.7"	0.0"	-6.7"
TRAJ: 125 m. zero	-.8"	4.5"	7.4"	7.7"	5.4"	0.0"
VELOCITY (fps)	1050	1003	963	928	894	863
ENERGY (ft. lbs.)	490	447	412	383	355	331
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.2"	-13.9"	-24.7"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.5"	-10.3"	-20.1"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.5"	-14.2"
TRAJ: 100 m. zero	-.8"	3.5"	5.2"	4.2"	0.0"	-7.2"
TRAJ: 125 m. zero	-.8"	4.9"	8.1"	8.5"	5.8"	0.0"
VELOCITY (fps)	1000	961	925	892	861	832
ENERGY (ft. lbs.)	444	410	380	353	329	307
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-7.1"	-15.4"	-27.3"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.0"	-11.3"	-22.0"
TRAJ: 75 m. zero	-.8"	2.4"	2.7"	0.0"	-5.9"	-15.3"
TRAJ: 100 m. zero	-.8"	3.9"	5.7"	4.5"	0.0"	-7.9"
TRAJ: 125 m. zero	-.8"	5.5"	8.8"	9.2"	6.4"	0.0"
VELOCITY (fps)	950	916	883	853	824	798
ENERGY (ft. lbs.)	401	373	346	323	302	283
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-8.0"	-17.4"	-30.1"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.4"	-12.6"	-24.1"
TRAJ: 75 m. zero	-.8"	2.7"	2.9"	0.0"	-6.7"	-16.8"
TRAJ: 100 m. zero	-.8"	4.4"	6.3"	5.1"	0.0"	-8.4"
TRAJ: 125 m. zero	-.8"	6.0"	9.7"	10.1"	6.7"	0.0"
VELOCITY (fps)	900	869	840	812	786	761
ENERGY (ft. lbs.)	360	335	313	293	274	257
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-9.0"	-19.3"	-33.9"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.1"	-14.1"	-27.4"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.3"	-18.8"
TRAJ: 100 m. zero	-.8"	4.8"	7.1"	5.5"	0.0"	-9.7"
TRAJ: 125 m. zero	-.8"	6.8"	11.0"	11.3"	7.8"	0.0"
VELOCITY (fps)	850	822	796	771	746	723
ENERGY (ft. lbs.)	321	300	281	264	247	232
TRAJ: 25 m. zero	-.8"	0.0"	-2.9"	-10.0"	-21.8"	-37.7"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.5"	-15.9"	-30.2"
TRAJ: 75 m. zero	-.8"	3.4"	3.7"	0.0"	-8.4"	-20.9"
TRAJ: 100 m. zero	-.8"	5.5"	8.0"	6.3"	0.0"	-10.3"
TRAJ: 125 m. zero	-.8"	7.5"	12.1"	12.6"	8.3"	0.0"
VELOCITY (fps)	800	775	751	727	704	682
ENERGY (ft. lbs.)	284	267	251	235	220	207
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.6"	-24.7"	-42.8"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.5"	-17.8"	-34.1"
TRAJ: 75 m. zero	-.8"	3.9"	4.3"	0.0"	-9.1"	-23.3"
TRAJ: 100 m. zero	-.8"	6.2"	8.9"	6.9"	0.0"	-11.8"
TRAJ: 125 m. zero	-.8"	8.8"	13.7"	14.0"	9.5"	0.0"

## 44 Caliber (.430" Dia.) 240 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .185 BALLISTIC COEFFICIENT: .141

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1298	1210	1139	1082	1035
ENERGY (ft. lbs.)	1045	898	780	692	624	571
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.7"	-14.2"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.1"	-6.1"	-12.3"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.3"	-8.8"
TRAJ: 100 m. zero	-.8"	1.9"	3.1"	2.5"	0.0"	-4.5"
TRAJ: 125 m. zero	-.8"	2.9"	4.9"	5.3"	3.7"	0.0"
VELOCITY (fps)	1309	1212	1140	1083	1036	996
ENERGY (ft. lbs.)	901	783	693	625	572	529
TRAJ: 25 m. zero	-.8"	0.0"	-1.0"	-3.9"	-9.0"	-16.4"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-7.0"	-13.8"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.7"	-9.7"
TRAJ: 100 m. zero	-.8"	2.3"	3.5"	2.8"	0.0"	-5.1"
TRAJ: 125 m. zero	-.8"	3.3"	5.5"	5.9"	4.1"	0.0"
VELOCITY (fps)	1200	1131	1076	1030	990	956
ENERGY (ft. lbs.)	768	682	617	566	522	487
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.6"	-10.6"	-18.9"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.8"	-8.1"	-15.9"
TRAJ: 75 m. zero	-.8"	1.6"	1.9"	0.0"	-4.3"	-11.2"
TRAJ: 100 m. zero	-.8"	2.7"	4.1"	3.3"	0.0"	-5.7"
TRAJ: 125 m. zero	-.8"	3.8"	6.4"	6.7"	4.6"	0.0"
VELOCITY (fps)	1100	1050	1008	972	939	909
ENERGY (ft. lbs.)	645	588	542	504	470	440
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.6"	-12.5"	-22.0"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.2"	-9.3"	-18.1"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-5.0"	-12.7"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.8"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.4"	7.3"	7.6"	5.1"	0.0"
VELOCITY (fps)	1000	965	933	903	875	848
ENERGY (ft. lbs.)	533	496	464	435	408	383
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-6.9"	-15.0"	-26.6"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.0"	-21.6"
TRAJ: 75 m. zero	-.8"	2.3"	2.6"	0.0"	-5.7"	-15.0"
TRAJ: 100 m. zero	-.8"	3.8"	5.5"	4.3"	0.0"	-7.8"
TRAJ: 125 m. zero	-.8"	5.3"	8.7"	9.0"	6.3"	0.0"
VELOCITY (fps)	950	919	890	863	837	812
ENERGY (ft. lbs.)	481	450	422	397	373	351
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.7"	-16.7"	-29.6"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.2"	-12.1"	-23.9"
TRAJ: 75 m. zero	-.8"	2.6"	2.9"	0.0"	-6.4"	-16.7"
TRAJ: 100 m. zero	-.8"	4.2"	6.1"	4.8"	0.0"	-8.7"
TRAJ: 125 m. zero	-.8"	5.9"	9.6"	10.1"	7.0"	0.0"
VELOCITY (fps)	900	872	846	821	797	775
ENERGY (ft. lbs.)	432	405	382	359	339	320
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.7"	-19.0"	-32.9"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.9"	-13.8"	-26.5"
TRAJ: 75 m. zero	-.8"	2.9"	3.3"	0.0"	-7.2"	-18.2"
TRAJ: 100 m. zero	-.8"	4.8"	6.9"	5.5"	0.0"	-9.1"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	11.0"	7.3"	0.0"
VELOCITY (fps)	850	825	801	779	757	736
ENERGY (ft. lbs.)	385	363	342	323	305	289
TRAJ: 25 m. zero	-.8"	0.0"	-3.0"	-9.9"	-21.3"	-36.9"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.3"	-15.1"	-29.1"
TRAJ: 75 m. zero	-.8"	3.3"	3.6"	0.0"	-8.0"	-20.2"
TRAJ: 100 m. zero	-.8"	5.3"	7.8"	6.0"	0.0"	-10.2"
TRAJ: 125 m. zero	-.8"	7.4"	11.7"	12.2"	8.2"	0.0"
VELOCITY (fps)	800	778	756	735	714	694
ENERGY (ft. lbs.)	341	323	305	288	272	257
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-11.5"	-24.5"	-42.3"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.1"	-17.4"	-33.4"
TRAJ: 75 m. zero	-.8"	3.8"	4.1"	0.0"	-9.1"	-23.1"
TRAJ: 100 m. zero	-.8"	6.1"	8.7"	6.9"	0.0"	-11.6"
TRAJ: 125 m. zero	-.8"	8.5"	13.4"	13.9"	9.4"	0.0"



**44 Caliber (.430" Dia.) 240 GRAIN FULL METAL JACKETED FLAT POINT**  
 SECTIONAL DENSITY: .185 BALLISTIC COEFFICIENT: .158

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1400	1309	1228	1160	1105	1059
ENERGY (ft. lbs.)	1045	913	804	717	651	598
TRAJ: 25 m. zero	-.8"	0.0"	-.7"	-3.2"	-7.5"	-13.9"
TRAJ: 50 m. zero	-.8"	.4"	0.0"	-2.0"	-6.0"	-12.0"
TRAJ: 75 m. zero	-.8"	1.1"	1.4"	0.0"	-3.2"	-8.5"
TRAJ: 100 m. zero	-.8"	1.9"	3.0"	2.4"	0.0"	-4.4"
TRAJ: 125 m. zero	-.8"	2.8"	4.8"	5.1"	3.6"	0.0"
VELOCITY (fps)	1300	1221	1154	1100	1055	1016
ENERGY (ft. lbs.)	901	795	710	645	593	550
TRAJ: 25 m. zero	-.8"	0.0"	-.9"	-3.9"	-8.8"	-16.1"
TRAJ: 50 m. zero	-.8"	.5"	0.0"	-2.4"	-6.8"	-13.6"
TRAJ: 75 m. zero	-.8"	1.3"	1.6"	0.0"	-3.6"	-9.6"
TRAJ: 100 m. zero	-.8"	2.2"	3.4"	2.7"	0.0"	-5.0"
TRAJ: 125 m. zero	-.8"	3.2"	5.5"	5.8"	4.0"	0.0"
VELOCITY (fps)	1200	1138	1087	1044	1006	974
ENERGY (ft. lbs.)	768	690	630	581	539	506
TRAJ: 25 m. zero	-.8"	0.0"	-1.2"	-4.5"	-10.4"	-18.5"
TRAJ: 50 m. zero	-.8"	.6"	0.0"	-2.7"	-7.9"	-15.4"
TRAJ: 75 m. zero	-.8"	1.5"	1.8"	0.0"	-4.3"	-10.8"
TRAJ: 100 m. zero	-.8"	2.6"	4.0"	3.2"	0.0"	-5.4"
TRAJ: 125 m. zero	-.8"	3.7"	6.2"	6.5"	4.4"	0.0"
VELOCITY (fps)	1100	1055	1016	983	952	924
ENERGY (ft. lbs.)	645	593	550	515	483	455
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.5"	-12.4"	-21.9"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.1"	-9.2"	-17.9"
TRAJ: 75 m. zero	-.8"	1.8"	2.1"	0.0"	-5.0"	-12.7"
TRAJ: 100 m. zero	-.8"	3.1"	4.6"	3.8"	0.0"	-6.4"
TRAJ: 125 m. zero	-.8"	4.4"	7.2"	7.6"	5.1"	0.0"
VELOCITY (fps)	1000	969	940	912	886	862
ENERGY (ft. lbs.)	533	501	471	443	418	396
TRAJ: 25 m. zero	-.8"	0.0"	-1.9"	-7.0"	-15.1"	-26.2"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.0"	-11.1"	-21.2"
TRAJ: 75 m. zero	-.8"	2.4"	2.7"	0.0"	-5.7"	-14.5"
TRAJ: 100 m. zero	-.8"	3.8"	5.6"	4.3"	0.0"	-7.3"
TRAJ: 125 m. zero	-.8"	5.3"	8.5"	8.7"	5.9"	0.0"
VELOCITY (fps)	950	922	896	871	847	825
ENERGY (ft. lbs.)	481	453	428	404	382	363
TRAJ: 25 m. zero	-.8"	0.0"	-2.2"	-7.6"	-16.6"	-28.8"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.3"	-12.2"	-23.3"
TRAJ: 75 m. zero	-.8"	2.6"	2.9"	0.0"	-6.4"	-16.0"
TRAJ: 100 m. zero	-.8"	4.2"	6.1"	4.8"	0.0"	-8.0"
TRAJ: 125 m. zero	-.8"	5.8"	9.3"	9.6"	6.4"	0.0"
VELOCITY (fps)	900	875	851	829	807	786
ENERGY (ft. lbs.)	432	408	386	366	347	329
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-8.6"	-18.6"	-32.8"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.6"	-13.3"	-26.2"
TRAJ: 75 m. zero	-.8"	2.9"	3.1"	0.0"	-7.1"	-18.5"
TRAJ: 100 m. zero	-.8"	4.7"	6.7"	5.4"	0.0"	-9.5"
TRAJ: 125 m. zero	-.8"	6.6"	10.5"	11.1"	7.6"	0.0"
VELOCITY (fps)	850	828	806	786	766	747
ENERGY (ft. lbs.)	385	365	346	329	313	297
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-9.9"	-21.2"	-36.5"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.2"	-14.9"	-28.7"
TRAJ: 75 m. zero	-.8"	3.3"	3.5"	0.0"	-7.9"	-19.9"
TRAJ: 100 m. zero	-.8"	5.3"	7.5"	6.0"	0.0"	-10.0"
TRAJ: 125 m. zero	-.8"	7.3"	11.5"	12.0"	8.0"	0.0"
VELOCITY (fps)	800	780	761	741	723	704
ENERGY (ft. lbs.)	341	324	309	293	279	264
TRAJ: 25 m. zero	-.8"	0.0"	-3.2"	-11.5"	-23.7"	-41.8"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-6.5"	-17.1"	-33.6"
TRAJ: 75 m. zero	-.8"	3.8"	4.4"	0.0"	-8.3"	-22.6"
TRAJ: 100 m. zero	-.8"	5.9"	8.6"	6.3"	0.0"	-12.2"
TRAJ: 125 m. zero	-.8"	8.4"	13.5"	13.6"	9.8"	0.0"

**44 Caliber (.430" Dia.) 240 GRAIN LEAD SEMI-WADCUTTER**

SECTIONAL DENSITY: .185 BALLISTIC COEFFICIENT: .130

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1046	1002	963	929	897
ENERGY (ft. lbs.)	645	583	535	494	460	429
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.7"	-12.5"	-22.3"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.4"	-9.4"	-18.4"
TRAJ: 75 m. zero	-.8"	1.9"	2.3"	0.0"	-4.8"	-12.7"
TRAJ: 100 m. zero	-.8"	3.1"	4.7"	3.7"	0.0"	-6.6"
TRAJ: 125 m. zero	-.8"	4.5"	7.4"	7.6"	5.3"	0.0"
VELOCITY (fps)	1050	1005	966	932	899	869
ENERGY (ft. lbs.)	588	538	497	463	431	403
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.2"	-13.9"	-24.5"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.5"	-10.2"	-19.9"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.5"	-14.0"
TRAJ: 100 m. zero	-.8"	3.5"	5.1"	4.2"	0.0"	-7.1"
TRAJ: 125 m. zero	-.8"	4.9"	8.0"	8.4"	5.7"	0.0"
VELOCITY (fps)	1000	962	928	896	866	838
ENERGY (ft. lbs.)	533	493	459	428	400	374
TRAJ: 25 m. zero	-.8"	0.0"	-1.9"	-6.9"	-15.1"	-26.7"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-3.9"	-11.1"	-21.7"
TRAJ: 75 m. zero	-.8"	2.3"	2.7"	0.0"	-5.8"	-15.1"
TRAJ: 100 m. zero	-.8"	3.8"	5.6"	4.4"	0.0"	-7.7"
TRAJ: 125 m. zero	-.8"	5.4"	8.7"	9.1"	6.2"	0.0"
VELOCITY (fps)	950	917	885	856	829	803
ENERGY (ft. lbs.)	481	448	417	391	366	344
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-7.9"	-16.9"	-29.8"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.3"	-12.1"	-23.8"
TRAJ: 75 m. zero	-.8"	2.7"	2.9"	0.0"	-6.2"	-16.5"
TRAJ: 100 m. zero	-.8"	4.2"	6.1"	4.7"	0.0"	-8.6"
TRAJ: 125 m. zero	-.8"	6.0"	9.5"	9.9"	6.9"	0.0"
VELOCITY (fps)	900	870	842	815	790	766
ENERGY (ft. lbs.)	432	403	378	354	333	313
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.9"	-19.1"	-33.4"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.0"	-13.9"	-26.9"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.1"	-18.5"
TRAJ: 100 m. zero	-.8"	4.8"	7.0"	5.4"	0.0"	-9.5"
TRAJ: 125 m. zero	-.8"	6.7"	10.8"	11.1"	7.6"	0.0"
VELOCITY (fps)	850	823	798	773	750	727
ENERGY (ft. lbs.)	385	361	339	319	300	282
TRAJ: 25 m. zero	-.8"	0.0"	-2.9"	-10.2"	-21.5"	-37.7"
TRAJ: 50 m. zero	-.8"	1.5"	0.0"	-5.8"	-15.6"	-30.3"
TRAJ: 75 m. zero	-.8"	3.4"	3.9"	0.0"	-7.8"	-20.5"
TRAJ: 100 m. zero	-.8"	5.4"	7.8"	5.9"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.5"	12.1"	12.3"	8.6"	0.0"
VELOCITY (fps)	800	776	753	730	708	686
ENERGY (ft. lbs.)	341	321	302	284	267	251
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.5"	-24.3"	-42.7"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.3"	-17.4"	-34.1"
TRAJ: 75 m. zero	-.8"	3.8"	4.3"	0.0"	-8.9"	-23.5"
TRAJ: 100 m. zero	-.8"	6.1"	8.7"	6.7"	0.0"	-12.3"
TRAJ: 125 m. zero	-.8"	8.5"	13.7"	14.1"	9.9"	0.0"

**45 Caliber (.451" Dia.) 185 GRAIN TARGET**

SECTIONAL DENSITY: .130 BALLISTIC COEFFICIENT: .074

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	900	849	803	762	722	685
ENERGY (ft. lbs.)	333	296	265	239	214	193
TRAJ: 25 m. zero	-.8"	0.0"	-2.8"	-9.5"	-20.9"	-36.9"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.2"	-15.2"	-29.8"
TRAJ: 75 m. zero	-.8"	3.2"	3.5"	0.0"	-8.1"	-21.0"
TRAJ: 100 m. zero	-.8"	5.2"	7.6"	6.1"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.4"	11.9"	12.6"	8.6"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	850	804	763	723	686	650
ENERGY (ft. lbs.)	297	266	239	215	193	174
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-10.9"	-23.3"	-41.5"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-6.1"	-17.0"	-33.6"
TRAJ: 75 m. zero	-.8"	3.6"	4.1"	0.0"	-8.8"	-23.3"
TRAJ: 100 m. zero	-.8"	5.8"	8.5"	6.6"	0.0"	-12.3"
TRAJ: 125 m. zero	-.8"	8.3"	13.5"	14.0"	9.9"	0.0"
VELOCITY (fps)	800	759	720	682	647	613
ENERGY (ft. lbs.)	263	237	213	191	172	154
TRAJ: 25 m. zero	-.8"	0.0"	-3.6"	-12.5"	-26.7"	-47.4"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-7.0"	-19.3"	-38.1"
TRAJ: 75 m. zero	-.8"	4.2"	4.7"	0.0"	-9.9"	-26.4"
TRAJ: 100 m. zero	-.8"	6.7"	9.7"	7.5"	0.0"	-13.9"
TRAJ: 125 m. zero	-.8"	9.5"	15.3"	15.8"	11.2"	0.0"
VELOCITY (fps)	750	712	675	640	606	575
ENERGY (ft. lbs.)	231	208	187	168	151	136
TRAJ: 25 m. zero	-.8"	0.0"	-4.3"	-14.4"	-31.1"	-54.1"
TRAJ: 50 m. zero	-.8"	2.2"	0.0"	-7.8"	-22.3"	-43.2"
TRAJ: 75 m. zero	-.8"	4.8"	5.2"	0.0"	-11.9"	-30.1"
TRAJ: 100 m. zero	-.8"	7.8"	11.2"	8.9"	0.0"	-15.2"
TRAJ: 125 m. zero	-.8"	10.8"	17.3"	18.1"	12.2"	0.0"
VELOCITY (fps)	700	664	630	597	566	536
ENERGY (ft. lbs.)	201	181	163	146	132	118
TRAJ: 25 m. zero	-.8"	0.0"	-5.0"	-16.6"	-35.4"	-62.7"
TRAJ: 50 m. zero	-.8"	2.5"	0.0"	-9.1"	-25.4"	-50.2"
TRAJ: 75 m. zero	-.8"	5.6"	6.1"	0.0"	-13.2"	-34.9"
TRAJ: 100 m. zero	-.8"	8.9"	12.7"	9.9"	0.0"	-18.4"
TRAJ: 125 m. zero	-.8"	12.5"	20.1"	21.0"	14.7"	0.0"
VELOCITY (fps)	650	617	585	554	525	498
ENERGY (ft. lbs.)	174	156	141	126	113	102
TRAJ: 25 m. zero	-.8"	0.0"	-6.0"	-19.8"	-42.0"	-72.9"
TRAJ: 50 m. zero	-.8"	3.0"	0.0"	-10.8"	-29.9"	-57.8"
TRAJ: 75 m. zero	-.8"	6.6"	7.2"	0.0"	-15.5"	-39.8"
TRAJ: 100 m. zero	-.8"	10.5"	15.0"	11.6"	0.0"	-20.4"
TRAJ: 125 m. zero	-.8"	14.6"	23.1"	23.9"	16.3"	0.0"
VELOCITY (fps)	600	569	539	511	484	459
ENERGY (ft. lbs.)	148	133	119	107	96	87
TRAJ: 25 m. zero	-.8"	0.0"	-7.3"	-23.4"	-49.7"	-86.2"
TRAJ: 50 m. zero	-.8"	3.7"	0.0"	-12.4"	-34.9"	-67.8"
TRAJ: 75 m. zero	-.8"	7.8"	8.3"	0.0"	-18.4"	-47.1"
TRAJ: 100 m. zero	-.8"	12.4"	17.5"	13.8"	0.0"	-24.0"
TRAJ: 125 m. zero	-.8"	17.2"	27.1"	28.3"	19.3"	0.0"

**45 Caliber (.451" Dia.) 185 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .130 BALLISTIC COEFFICIENT: .106

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1036	984	940	900	864
ENERGY (ft. lbs.)	497	441	398	363	333	307
TRAJ: 25 m. zero	-.8"	0.0"	-1.6"	-5.9"	-13.1"	-23.3"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.5"	-9.8"	-19.1"
TRAJ: 75 m. zero	-.8"	2.0"	2.3"	0.0"	-5.2"	-13.3"
TRAJ: 100 m. zero	-.8"	3.3"	4.9"	3.9"	0.0"	-6.8"
TRAJ: 125 m. zero	-.8"	4.7"	7.7"	8.0"	5.5"	0.0"
VELOCITY (fps)	1050	996	951	910	872	838
ENERGY (ft. lbs.)	453	408	372	340	312	289
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.5"	-14.4"	-25.4"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.8"	-10.7"	-20.8"
TRAJ: 75 m. zero	-.8"	2.2"	2.5"	0.0"	-5.7"	-14.5"
TRAJ: 100 m. zero	-.8"	3.6"	5.4"	4.3"	0.0"	-7.3"
TRAJ: 125 m. zero	-.8"	5.1"	8.3"	8.7"	5.9"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1000	955	914	876	841	809
ENERGY (ft. lbs.)	411	375	343	315	291	269
TRAJ: 25 m. zero	-.8"	0.0"	-2.0"	-7.2"	-15.8"	-27.9"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.1"	-11.7"	-22.7"
TRAJ: 75 m. zero	-.8"	2.4"	2.8"	0.0"	-6.1"	-15.7"
TRAJ: 100 m. zero	-.8"	4.0"	5.9"	4.6"	0.0"	-8.1"
TRAJ: 125 m. zero	-.8"	5.6"	9.1"	9.5"	6.5"	0.0"
VELOCITY (fps)	950	910	872	838	806	776
ENERGY (ft. lbs.)	371	340	312	289	267	247
TRAJ: 25 m. zero	-.8"	0.0"	-2.4"	-8.1"	-17.5"	-31.0"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.4"	-12.6"	-24.9"
TRAJ: 75 m. zero	-.8"	2.7"	3.0"	0.0"	-6.7"	-17.4"
TRAJ: 100 m. zero	-.8"	4.4"	6.3"	5.0"	0.0"	-9.0"
TRAJ: 125 m. zero	-.8"	6.2"	10.0"	10.5"	7.3"	0.0"
VELOCITY (fps)	900	864	830	798	769	741
ENERGY (ft. lbs.)	333	307	283	262	243	226
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.3"	-19.7"	-34.4"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.2"	-14.3"	-27.6"
TRAJ: 75 m. zero	-.8"	3.1"	3.5"	0.0"	-7.3"	-18.9"
TRAJ: 100 m. zero	-.8"	4.9"	7.2"	5.5"	0.0"	-9.7"
TRAJ: 125 m. zero	-.8"	6.9"	11.1"	11.3"	7.8"	0.0"
VELOCITY (fps)	850	818	787	758	730	703
ENERGY (ft. lbs.)	297	275	254	236	219	203
TRAJ: 25 m. zero	-.8"	0.0"	-3.1"	-10.5"	-22.4"	-39.1"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.7"	-16.0"	-31.1"
TRAJ: 75 m. zero	-.8"	3.5"	3.8"	0.0"	-8.3"	-21.5"
TRAJ: 100 m. zero	-.8"	5.6"	8.0"	6.3"	0.0"	-11.1"
TRAJ: 125 m. zero	-.8"	7.8"	12.5"	12.9"	8.9"	0.0"
VELOCITY (fps)	800	771	743	715	689	663
ENERGY (ft. lbs.)	263	244	227	210	195	181
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-12.0"	-25.2"	-44.3"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.7"	-18.1"	-35.5"
TRAJ: 75 m. zero	-.8"	4.0"	4.5"	0.0"	-9.1"	-24.3"
TRAJ: 100 m. zero	-.8"	6.3"	9.1"	6.9"	0.0"	-12.8"
TRAJ: 125 m. zero	-.8"	8.9"	14.2"	14.6"	10.3"	0.0"
VELOCITY (fps)	750	723	696	670	646	622
ENERGY (ft. lbs.)	231	215	199	184	171	159
TRAJ: 25 m. zero	-.8"	0.0"	-4.2"	-14.0"	-28.9"	-50.4"
TRAJ: 50 m. zero	-.8"	2.1"	0.0"	-7.5"	-20.3"	-39.8"
TRAJ: 75 m. zero	-.8"	4.7"	5.1"	0.0"	-10.2"	-27.0"
TRAJ: 100 m. zero	-.8"	7.2"	10.2"	7.7"	0.0"	-14.2"
TRAJ: 125 m. zero	-.8"	10.1"	15.9"	16.2"	11.4"	0.0"
VELOCITY (fps)	700	675	650	626	602	580
ENERGY (ft. lbs.)	201	187	174	161	149	138
TRAJ: 25 m. zero	-.8"	0.0"	-4.9"	-15.9"	-34.2"	-58.7"
TRAJ: 50 m. zero	-.8"	2.5"	0.0"	-8.5"	-24.3"	-46.4"
TRAJ: 75 m. zero	-.8"	5.3"	5.7"	0.0"	-12.9"	-32.1"
TRAJ: 100 m. zero	-.8"	8.6"	12.2"	9.7"	0.0"	-15.9"
TRAJ: 125 m. zero	-.8"	11.8"	18.6"	19.3"	12.8"	0.0"

**45 Caliber (.451" Dia.) 230 GRAIN FULL METAL JACKETED ROUND NOSE**

SECTIONAL DENSITY: .162 BALLISTIC COEFFICIENT: .138

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	900	872	845	819	795	773
ENERGY (ft. lbs.)	414	388	365	343	323	305
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-9.1"	-19.3"	-33.0"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.1"	-13.9"	-26.4"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.1"	-17.9"
TRAJ: 100 m. zero	-.8"	4.8"	7.0"	5.4"	0.0"	-8.9"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	10.7"	7.2"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	850	825	800	777	755	733
ENERGY (ft. lbs.)	369	348	327	308	291	274
TRAJ: 25 m. zero	-.8"	0.0"	-3.2"	-10.3"	-21.7"	-37.8"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.5"	-15.2"	-29.8"
TRAJ: 75 m. zero	-.8"	3.5"	3.7"	0.0"	-7.8"	-20.5"
TRAJ: 100 m. zero	-.8"	5.4"	7.8"	5.9"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.6"	11.9"	12.3"	8.6"	0.0"
VELOCITY (fps)	800	777	755	733	712	692
ENERGY (ft. lbs.)	327	308	291	274	259	245
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.6"	-24.5"	-42.0"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.4"	-17.5"	-33.4"
TRAJ: 75 m. zero	-.8"	3.9"	4.3"	0.0"	-8.9"	-22.6"
TRAJ: 100 m. zero	-.8"	6.1"	8.8"	6.7"	0.0"	-11.4"
TRAJ: 125 m. zero	-.8"	8.4"	13.4"	13.6"	9.2"	0.0"
VELOCITY (fps)	750	729	708	688	668	648
ENERGY (ft. lbs.)	287	271	256	242	228	215
TRAJ: 25 m. zero	-.8"	0.0"	-4.1"	-13.2"	-28.0"	-49.2"
TRAJ: 50 m. zero	-.8"	2.1"	0.0"	-7.0"	-19.7"	-38.9"
TRAJ: 75 m. zero	-.8"	4.4"	4.7"	0.0"	-10.4"	-27.2"
TRAJ: 100 m. zero	-.8"	7.0"	9.9"	7.8"	0.0"	-14.2"
TRAJ: 125 m. zero	-.8"	9.9"	15.6"	16.3"	11.4"	0.0"
VELOCITY (fps)	700	680	661	642	623	605
ENERGY (ft. lbs.)	250	236	223	211	198	187
TRAJ: 25 m. zero	-.8"	0.0"	-4.5"	-15.1"	-32.4"	-56.0"
TRAJ: 50 m. zero	-.8"	2.3"	0.0"	-8.2"	-23.2"	-44.5"
TRAJ: 75 m. zero	-.8"	5.1"	5.5"	0.0"	-12.2"	-30.7"
TRAJ: 100 m. zero	-.8"	8.1"	11.6"	9.2"	0.0"	-15.4"
TRAJ: 125 m. zero	-.8"	11.2"	17.8"	18.5"	12.4"	0.0"
VELOCITY (fps)	650	632	613	596	578	561
ENERGY (ft. lbs.)	216	204	192	181	171	161
TRAJ: 25 m. zero	-.8"	0.0"	-6.0"	-18.2"	-38.9"	-66.9"
TRAJ: 50 m. zero	-.8"	3.0"	0.0"	-9.1"	-26.7"	-51.7"
TRAJ: 75 m. zero	-.8"	6.1"	6.1"	0.0"	-14.5"	-36.5"
TRAJ: 100 m. zero	-.8"	9.7"	13.4"	10.9"	0.0"	-18.3"
TRAJ: 125 m. zero	-.8"	13.4"	20.7"	21.9"	14.7"	0.0"
VELOCITY (fps)	600	583	566	550	534	518
ENERGY (ft. lbs.)	184	174	164	155	146	137
TRAJ: 25 m. zero	-.8"	0.0"	-6.8"	-21.3"	-44.5"	-77.7"
TRAJ: 50 m. zero	-.8"	3.4"	0.0"	-10.9"	-30.7"	-60.4"
TRAJ: 75 m. zero	-.8"	7.1"	7.3"	0.0"	-16.1"	-42.1"
TRAJ: 100 m. zero	-.8"	11.1"	15.4"	12.1"	0.0"	-21.9"
TRAJ: 125 m. zero	-.8"	15.5"	24.2"	25.3"	17.6"	0.0"

### 45 Caliber (.451" Dia.) 230 GRAIN FULL METAL JACKETED FLAT POINT

SECTIONAL DENSITY: .162 BALLISTIC COEFFICIENT: .148

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	900	874	848	824	802	780
ENERGY (ft. lbs.)	414	390	367	347	329	311
TRAJ: 25 m. zero	-.8"	0.0"	-2.7"	-9.0"	-18.8"	-33.0"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-4.9"	-13.3"	-26.1"
TRAJ: 75 m. zero	-.8"	3.0"	3.3"	0.0"	-6.7"	-17.9"
TRAJ: 100 m. zero	-.8"	4.7"	6.7"	5.1"	0.0"	-9.5"
TRAJ: 125 m. zero	-.8"	6.6"	10.5"	10.8"	7.6"	0.0"
VELOCITY (fps)	850	826	804	782	761	740
ENERGY (ft. lbs.)	369	349	330	312	296	280
TRAJ: 25 m. zero	-.8"	0.0"	-2.8"	-9.9"	-21.1"	-37.2"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.6"	-15.4"	-30.0"
TRAJ: 75 m. zero	-.8"	3.3"	3.8"	0.0"	-7.9"	-20.6"
TRAJ: 100 m. zero	-.8"	5.3"	7.7"	5.9"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.4"	12.0"	12.4"	8.6"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	800	779	758	738	718	698
ENERGY (ft. lbs.)	327	310	294	278	263	249
TRAJ: 25 m. zero	-.8"	0.0"	-3.5"	-11.4"	-24.2"	-42.5"
TRAJ: 50 m. zero	-.8"	1.8"	0.0"	-6.0"	-17.1"	-33.7"
TRAJ: 75 m. zero	-.8"	3.8"	4.1"	0.0"	-9.0"	-23.5"
TRAJ: 100 m. zero	-.8"	6.1"	8.6"	6.8"	0.0"	-12.2"
TRAJ: 125 m. zero	-.8"	8.5"	13.5"	14.1"	9.8"	0.0"
VELOCITY (fps)	750	730	711	691	673	655
ENERGY (ft. lbs.)	287	272	258	244	231	219
TRAJ: 25 m. zero	-.8"	0.0"	-3.8"	-13.4"	-27.6"	-47.6"
TRAJ: 50 m. zero	-.8"	1.9"	0.0"	-7.6"	-19.8"	-37.9"
TRAJ: 75 m. zero	-.8"	4.5"	5.1"	0.0"	-9.6"	-25.2"
TRAJ: 100 m. zero	-.8"	6.9"	9.9"	7.3"	0.0"	-13.1"
TRAJ: 125 m. zero	-.8"	9.5"	15.2"	15.1"	10.5"	0.0"
VELOCITY (fps)	700	682	663	645	628	611
ENERGY (ft. lbs.)	250	238	225	213	201	191
TRAJ: 25 m. zero	-.8"	0.0"	-5.0"	-15.9"	-32.5"	-55.9"
TRAJ: 50 m. zero	-.8"	2.5"	0.0"	-8.3"	-22.4"	-43.3"
TRAJ: 75 m. zero	-.8"	5.3"	5.6"	0.0"	-11.2"	-29.3"
TRAJ: 100 m. zero	-.8"	8.1"	11.2"	8.5"	0.0"	-15.2"
TRAJ: 125 m. zero	-.8"	11.2"	17.3"	17.6"	12.2"	0.0"
VELOCITY (fps)	650	633	616	599	583	567
ENERGY (ft. lbs.)	216	205	194	183	174	164
TRAJ: 25 m. zero	-.8"	0.0"	-5.6"	-18.3"	-37.7"	-65.1"
TRAJ: 50 m. zero	-.8"	2.8"	0.0"	-9.9"	-26.4"	-51.1"
TRAJ: 75 m. zero	-.8"	6.1"	6.6"	0.0"	-13.2"	-34.6"
TRAJ: 100 m. zero	-.8"	9.4"	13.2"	10.0"	0.0"	-18.0"
TRAJ: 125 m. zero	-.8"	13.0"	20.5"	20.8"	14.4"	0.0"
VELOCITY (fps)	600	584	568	553	538	523
ENERGY (ft. lbs.)	184	174	165	156	148	140
TRAJ: 25 m. zero	-.8"	0.0"	-6.8"	-21.2"	-44.1"	-76.7"
TRAJ: 50 m. zero	-.8"	3.4"	0.0"	-10.8"	-30.3"	-59.4"
TRAJ: 75 m. zero	-.8"	7.1"	7.3"	0.0"	-15.8"	-41.3"
TRAJ: 100 m. zero	-.8"	11.0"	15.2"	11.9"	0.0"	-21.5"
TRAJ: 125 m. zero	-.8"	15.3"	23.8"	24.8"	17.2"	0.0"

**45 Caliber (.452" Dia.) 200 GRAIN LEAD SEMI-WADCUTTER**

SECTIONAL DENSITY: .140 BALLISTIC COEFFICIENT: .080

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1000	941	889	843	801	762
ENERGY (ft. lbs.)	444	393	351	316	285	258
TRAJ: 25 m. zero	-.8"	0.0"	-2.1"	-7.5"	-16.4"	-29.5"
TRAJ: 50 m. zero	-.8"	1.1"	0.0"	-4.2"	-12.1"	-24.1"
TRAJ: 75 m. zero	-.8"	2.5"	2.8"	0.0"	-6.4"	-17.0"
TRAJ: 100 m. zero	-.8"	4.1"	6.1"	4.9"	0.0"	-8.9"
TRAJ: 125 m. zero	-.8"	5.9"	9.7"	10.2"	7.2"	0.0"
VELOCITY (fps)	950	898	850	807	768	731
ENERGY (ft. lbs.)	401	358	321	289	262	237
TRAJ: 25 m. zero	-.8"	0.0"	-2.5"	-8.6"	-18.6"	-32.9"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-4.8"	-13.5"	-26.7"
TRAJ: 75 m. zero	-.8"	2.9"	3.2"	0.0"	-7.1"	-18.6"
TRAJ: 100 m. zero	-.8"	4.7"	6.8"	5.4"	0.0"	-9.7"
TRAJ: 125 m. zero	-.8"	6.6"	10.7"	11.2"	7.8"	0.0"
VELOCITY (fps)	900	853	810	771	734	698
ENERGY (ft. lbs.)	360	323	291	264	239	216
TRAJ: 25 m. zero	-.8"	0.0"	-2.8"	-9.4"	-20.5"	-36.6"
TRAJ: 50 m. zero	-.8"	1.4"	0.0"	-5.2"	-14.9"	-29.6"
TRAJ: 75 m. zero	-.8"	3.2"	3.5"	0.0"	-7.8"	-20.7"
TRAJ: 100 m. zero	-.8"	5.1"	7.5"	5.9"	0.0"	-10.9"
TRAJ: 125 m. zero	-.8"	7.3"	11.8"	12.5"	8.8"	0.0"



RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	850	808	769	732	696	663
ENERGY (ft. lbs.)	321	290	263	238	215	195
TRAJ: 25 m. zero	-.8"	0.0"	-3.2"	-10.8"	-23.4"	-40.9"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.9"	-17.0"	-32.9"
TRAJ: 75 m. zero	-.8"	3.6"	4.0"	0.0"	-9.0"	-22.9"
TRAJ: 100 m. zero	-.8"	5.9"	8.5"	6.8"	0.0"	-11.6"
TRAJ: 125 m. zero	-.8"	8.2"	13.2"	13.8"	9.3"	0.0"
VELOCITY (fps)	800	762	725	690	657	625
ENERGY (ft. lbs.)	284	258	233	211	192	174
TRAJ: 25 m. zero	-.8"	0.0"	-3.7"	-12.4"	-26.4"	-46.6"
TRAJ: 50 m. zero	-.8"	1.9"	0.0"	-6.8"	-18.9"	-37.2"
TRAJ: 75 m. zero	-.8"	4.2"	4.5"	0.0"	-9.8"	-25.8"
TRAJ: 100 m. zero	-.8"	6.6"	9.5"	7.4"	0.0"	-13.5"
TRAJ: 125 m. zero	-.8"	9.3"	14.9"	15.5"	10.9"	0.0"
VELOCITY (fps)	750	714	680	647	616	586
ENERGY (ft. lbs.)	250	226	205	186	169	153
TRAJ: 25 m. zero	-.8"	0.0"	-4.2"	-14.2"	-30.1"	-53.1"
TRAJ: 50 m. zero	-.8"	2.1"	0.0"	-7.8"	-21.6"	-42.5"
TRAJ: 75 m. zero	-.8"	4.7"	5.2"	0.0"	-11.2"	-29.4"
TRAJ: 100 m. zero	-.8"	7.5"	10.8"	8.4"	0.0"	-15.4"
TRAJ: 125 m. zero	-.8"	10.6"	17.0"	17.7"	12.4"	0.0"
VELOCITY (fps)	700	667	635	604	575	547
ENERGY (ft. lbs.)	218	198	179	162	147	133
TRAJ: 25 m. zero	-.8"	0.0"	-5.0"	-16.6"	-35.0"	-61.5"
TRAJ: 50 m. zero	-.8"	2.5"	0.0"	-9.0"	-25.0"	-48.9"
TRAJ: 75 m. zero	-.8"	5.5"	6.1"	0.0"	-12.8"	-33.8"
TRAJ: 100 m. zero	-.8"	8.8"	12.5"	9.7"	0.0"	-17.6"
TRAJ: 125 m. zero	-.8"	12.3"	19.6"	20.3"	14.1"	0.0"
VELOCITY (fps)	650	619	589	561	533	507
ENERGY (ft. lbs.)	188	170	154	140	126	114
TRAJ: 25 m. zero	-.8"	0.0"	-6.0"	-19.2"	-41.4"	-72.3"
TRAJ: 50 m. zero	-.8"	3.0"	0.0"	-10.1"	-29.3"	-57.2"
TRAJ: 75 m. zero	-.8"	6.4"	6.8"	0.0"	-15.7"	-40.3"
TRAJ: 100 m. zero	-.8"	10.4"	14.7"	11.8"	0.0"	-20.5"
TRAJ: 125 m. zero	-.8"	14.5"	22.9"	24.2"	16.4"	0.0"
VELOCITY (fps)	600	571	544	517	492	468
ENERGY (ft. lbs.)	160	145	131	119	108	97
TRAJ: 25 m. zero	-.8"	0.0"	-6.9"	-23.0"	-48.4"	-84.6"
TRAJ: 50 m. zero	-.8"	3.5"	0.0"	-12.7"	-34.6"	-67.3"
TRAJ: 75 m. zero	-.8"	7.7"	8.5"	0.0"	-17.7"	-46.1"
TRAJ: 100 m. zero	-.8"	12.1"	17.3"	13.3"	0.0"	-24.0"
TRAJ: 125 m. zero	-.8"	16.9"	27.0"	27.7"	19.2"	0.0"

**45 Caliber (.452" Dia.) 250 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .175 BALLISTIC COEFFICIENT: .138

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1100	1049	1006	969	936	905
ENERGY (ft. lbs.)	672	611	562	521	486	455
TRAJ: 25 m. zero	-.8"	0.0"	-1.5"	-5.7"	-12.6"	-22.4"
TRAJ: 50 m. zero	-.8"	.8"	0.0"	-3.3"	-9.4"	-18.4"
TRAJ: 75 m. zero	-.8"	1.9"	2.2"	0.0"	-4.9"	-12.8"
TRAJ: 100 m. zero	-.8"	3.2"	4.7"	3.7"	0.0"	-6.6"
TRAJ: 125 m. zero	-.8"	4.5"	7.4"	7.7"	5.3"	0.0"
VELOCITY (fps)	1050	1007	970	937	906	877
ENERGY (ft. lbs.)	612	563	522	488	456	427
TRAJ: 25 m. zero	-.8"	0.0"	-1.8"	-6.3"	-13.7"	-24.3"
TRAJ: 50 m. zero	-.8"	.9"	0.0"	-3.6"	-10.1"	-19.8"
TRAJ: 75 m. zero	-.8"	2.1"	2.4"	0.0"	-5.3"	-13.8"
TRAJ: 100 m. zero	-.8"	3.4"	5.1"	4.0"	0.0"	-7.1"
TRAJ: 125 m. zero	-.8"	4.9"	7.9"	8.3"	5.7"	0.0"

RANGE	MUZZLE	25 m.	50 m.	75 m.	100 m.	125 m.
VELOCITY (fps)	1000	964	932	901	872	845
ENERGY (ft. lbs.)	555	516	482	451	422	396
TRAJ: 25 m. zero	-.8"	0.0"	-1.9"	-6.9"	-15.2"	-26.8"
TRAJ: 50 m. zero	-.8"	1.0"	0.0"	-4.0"	-11.3"	-21.9"
TRAJ: 75 m. zero	-.8"	2.3"	2.7"	0.0"	-5.9"	-15.1"
TRAJ: 100 m. zero	-.8"	3.8"	5.7"	4.4"	0.0"	-7.7"
TRAJ: 125 m. zero	-.8"	5.4"	8.8"	9.1"	6.2"	0.0"
VELOCITY (fps)	950	919	889	861	835	810
ENERGY (ft. lbs.)	501	469	439	412	387	364
TRAJ: 25 m. zero	-.8"	0.0"	-2.3"	-7.9"	-16.8"	-29.6"
TRAJ: 50 m. zero	-.8"	1.2"	0.0"	-4.4"	-12.2"	-23.8"
TRAJ: 75 m. zero	-.8"	2.6"	3.0"	0.0"	-6.3"	-16.4"
TRAJ: 100 m. zero	-.8"	4.2"	6.1"	4.7"	0.0"	-8.5"
TRAJ: 125 m. zero	-.8"	5.9"	9.5"	9.9"	6.9"	0.0"
VELOCITY (fps)	900	872	845	819	795	773
ENERGY (ft. lbs.)	450	422	396	372	351	332
TRAJ: 25 m. zero	-.8"	0.0"	-2.6"	-9.1"	-19.3"	-33.0"
TRAJ: 50 m. zero	-.8"	1.3"	0.0"	-5.1"	-13.9"	-26.4"
TRAJ: 75 m. zero	-.8"	3.0"	3.4"	0.0"	-7.1"	-17.9"
TRAJ: 100 m. zero	-.8"	4.8"	7.0"	5.4"	0.0"	-8.9"
TRAJ: 125 m. zero	-.8"	6.6"	10.6"	10.7"	7.2"	0.0"
VELOCITY (fps)	850	825	800	777	755	733
ENERGY (ft. lbs.)	401	378	355	335	317	298
TRAJ: 25 m. zero	-.8"	0.0"	-3.2"	-10.3"	-21.7"	-37.8"
TRAJ: 50 m. zero	-.8"	1.6"	0.0"	-5.5"	-15.2"	-29.8"
TRAJ: 75 m. zero	-.8"	3.5"	3.7"	0.0"	-7.8"	-20.5"
TRAJ: 100 m. zero	-.8"	5.4"	7.6"	5.9"	0.0"	-10.7"
TRAJ: 125 m. zero	-.8"	7.6"	11.9"	12.3"	8.6"	0.0"
VELOCITY (fps)	800	777	755	733	712	692
ENERGY (ft. lbs.)	355	335	317	298	281	266
TRAJ: 25 m. zero	-.8"	0.0"	-3.4"	-11.6"	-24.5"	-42.0"
TRAJ: 50 m. zero	-.8"	1.7"	0.0"	-6.4"	-17.5"	-33.4"
TRAJ: 75 m. zero	-.8"	3.9"	4.3"	0.0"	-8.9"	-22.6"
TRAJ: 100 m. zero	-.8"	6.1"	8.8"	6.7"	0.0"	-11.4"
TRAJ: 125 m. zero	-.8"	8.4"	13.4"	13.6"	9.2"	0.0"

## TRAJECTORY TABLES (LONG RANGE PISTOL/SILHOUETTE)

22 Caliber (.224" Dia.) 55 GRAIN SPIRE POINT

SECTIONAL DENSITY: .157 BALLISTIC COEFFICIENT: .235

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2900	2677	2484	2262	2136	2072
ENERGY (ft. lbs.)	1027	875	742	625	557	524
TRAJ: 50 m. zero	-.8"	0.0"	-.8"	-3.1"	-5.7"	-7.5"
TRAJ: 100 m. zero	-.8"	.3"	0.0"	-2.0"	-4.5"	-6.1"
TRAJ: 150 m. zero	-.8"	1.0"	1.4"	0.0"	-1.9"	-3.3"
TRAJ: 200 yd. zero	-.8"	1.6"	2.5"	1.6"	0.0"	-1.2"
TRAJ: 200 m. zero	-.8"	1.9"	3.1"	2.5"	1.1"	0.0"
VELOCITY (fps)	2800	2581	2373	2177	2054	1992
ENERGY (ft. lbs.)	958	814	688	579	515	485
TRAJ: 50 m. zero	-.8"	0.0"	-.8"	-3.4"	-6.3"	-8.3"
TRAJ: 100 m. zero	-.8"	.4"	0.0"	-2.2"	-4.9"	-6.6"
TRAJ: 150 m. zero	-.8"	1.2"	1.5"	0.0"	-2.1"	-3.6"
TRAJ: 200 yd. zero	-.8"	1.7"	2.7"	1.8"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.1"	3.3"	2.8"	1.2"	0.0"
VELOCITY (fps)	2700	2486	2284	2093	1973	1913
ENERGY (ft. lbs.)	891	755	637	535	476	447
TRAJ: 50 m. zero	-.8"	0.0"	-.9"	-3.8"	-7.0"	-9.1"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.4"	-5.3"	-7.2"
TRAJ: 150 m. zero	-.8"	1.3"	1.6"	0.0"	-2.3"	-3.9"
TRAJ: 200 yd. zero	-.8"	1.9"	2.9"	1.9"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.3"	3.6"	3.0"	1.3"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2600	2392	2195	2009	1893	1834
ENERGY (ft. lbs.)	826	699	589	493	438	411
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.3"	-7.7"	-10.0"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.7"	-5.8"	-7.9"
TRAJ: 150 m. zero	-.8"	1.4"	1.8"	0.0"	-2.5"	-4.3"
TRAJ: 200 yd. zero	-.8"	2.1"	3.2"	2.1"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.5"	4.0"	3.3"	1.4"	0.0"
VELOCITY (fps)	2500	2297	2106	1926	1813	1756
ENERGY (ft. lbs.)	763	645	542	453	402	377
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.7"	-8.6"	-11.1"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-2.9"	-6.3"	-8.7"
TRAJ: 150 m. zero	-.8"	1.6"	2.0"	0.0"	-2.7"	-4.7"
TRAJ: 200 yd. zero	-.8"	2.4"	3.5"	2.3"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	2.8"	4.4"	3.6"	1.6"	0.0"
VELOCITY (fps)	2400	2203	2017	1842	1733	1679
ENERGY (ft. lbs.)	704	593	497	414	367	344
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-5.3"	-9.5"	-12.3"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.2"	-7.0"	-9.5"
TRAJ: 150 m. zero	-.8"	1.8"	2.2"	0.0"	-3.0"	-5.1"
TRAJ: 200 yd. zero	-.8"	2.6"	3.8"	2.5"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.1"	4.8"	3.9"	1.7"	0.0"
VELOCITY (fps)	2300	2109	1929	1759	1655	1603
ENERGY (ft. lbs.)	646	543	455	378	335	314
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.9"	-10.6"	-13.7"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.6"	-7.7"	-10.5"
TRAJ: 150 m. zero	-.8"	2.0"	2.4"	0.0"	-3.3"	-5.7"
TRAJ: 200 yd. zero	-.8"	2.9"	4.2"	2.8"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.4"	5.3"	4.3"	1.9"	0.0"

## 22 Caliber (.224" Dia.) 60 GRAIN SPIRE POINT

SECTIONAL DENSITY: .171 BALLISTIC COEFFICIENT: .262

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2700	2507	2324	2150	2041	1985
ENERGY (ft. lbs.)	971	838	720	616	555	525
TRAJ: 50 m. zero	-.8"	0.0"	-.9"	-3.7"	-6.7"	-8.7"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.3"	-5.1"	-6.9"
TRAJ: 150 m. zero	-.8"	1.2"	1.6"	0.0"	-2.2"	-3.8"
TRAJ: 200 yd. zero	-.8"	1.9"	2.8"	1.8"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.2"	3.5"	2.9"	1.3"	0.0"
VELOCITY (fps)	2600	2412	2234	2065	1958	1904
ENERGY (ft. lbs.)	901	775	665	568	511	483
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.1"	-7.5"	-9.6"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.5"	-5.6"	-7.6"
TRAJ: 150 m. zero	-.8"	1.4"	1.7"	0.0"	-2.4"	-4.1"
TRAJ: 200 yd. zero	-.8"	2.1"	3.1"	2.0"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.4"	3.8"	3.1"	1.4"	0.0"
VELOCITY (fps)	2500	2318	2144	1980	1876	1824
ENERGY (ft. lbs.)	833	716	613	522	469	443
TRAJ: 50 m. zero	-.8"	0.0"	-1.1"	-4.6"	-8.3"	-10.7"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-2.8"	-6.1"	-8.3"
TRAJ: 150 m. zero	-.8"	1.5"	1.9"	0.0"	-2.6"	-4.5"
TRAJ: 200 yd. zero	-.8"	2.3"	3.4"	2.2"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.7"	4.2"	3.4"	1.5"	0.0"
VELOCITY (fps)	2400	2223	2054	1895	1795	1744
ENERGY (ft. lbs.)	768	659	562	479	429	405
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-5.1"	-9.2"	-11.8"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.1"	-6.7"	-9.1"
TRAJ: 150 m. zero	-.8"	1.7"	2.1"	0.0"	-2.9"	-4.9"
TRAJ: 200 yd. zero	-.8"	2.5"	3.7"	2.4"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	3.0"	4.6"	3.7"	1.6"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2300	2128	1965	1810	1714	1665
ENERGY (ft. lbs.)	705	603	515	437	391	369
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.7"	-10.2"	-13.1"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.4"	-7.4"	-10.1"
TRAJ: 150 m. zero	-.8"	1.9"	2.3"	0.0"	-3.1"	-5.4"
TRAJ: 200 yd. zero	-.8"	2.8"	4.1"	2.6"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.3"	5.1"	4.1"	1.8"	0.0"
VELOCITY (fps)	2200	2033	1875	1726	1634	1588
ENERGY (ft. lbs.)	645	551	469	397	356	336
TRAJ: 50 m. zero	-.8"	0.0"	-1.7"	-6.4"	-11.4"	-14.6"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.8"	-8.2"	-11.1"
TRAJ: 150 m. zero	-.8"	2.2"	2.6"	0.0"	-3.5"	-6.0"
TRAJ: 200 yd. zero	-.8"	3.1"	4.5"	2.9"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	3.7"	5.6"	4.5"	1.9"	0.0"
VELOCITY (fps)	2100	1939	1786	1643	1556	1511
ENERGY (ft. lbs.)	588	501	425	360	323	304
TRAJ: 50 m. zero	-.8"	0.0"	-2.0"	-7.3"	-12.7"	-16.4"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-4.2"	-9.1"	-12.4"
TRAJ: 150 m. zero	-.8"	2.4"	2.9"	0.0"	-3.8"	-6.6"
TRAJ: 200 yd. zero	-.8"	3.5"	5.0"	3.2"	0.0"	-2.4"
TRAJ: 200 m. zero	-.8"	4.1"	6.2"	5.0"	2.2"	0.0"

**6 MM (.243" Dia.) 100 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .242 BALLISTIC COEFFICIENT: .357

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2700	2558	2420	2288	2203	2159
ENERGY (ft. lbs.)	1619	1453	1301	1163	1078	1035
TRAJ: 50 m. zero	-.8"	0.0"	-.8"	-3.4"	-6.2"	-8.0"
TRAJ: 100 m. zero	-.8"	.4"	0.0"	-2.1"	-4.8"	-6.3"
TRAJ: 150 m. zero	-.8"	1.1"	1.5"	0.0"	-2.0"	-3.4"
TRAJ: 200 yd. zero	-.8"	1.7"	2.6"	1.7"	0.0"	-1.2"
TRAJ: 200 m. zero	-.8"	2.0"	3.2"	2.6"	1.1"	0.0"
VELOCITY (fps)	2600	2461	2327	2198	2116	2074
ENERGY (ft. lbs.)	1501	1345	1203	1073	994	955
TRAJ: 50 m. zero	-.8"	0.0"	-.9"	-3.8"	-6.8"	-8.8"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.4"	-5.1"	-6.9"
TRAJ: 150 m. zero	-.8"	1.3"	1.6"	0.0"	-2.1"	-3.7"
TRAJ: 200 yd. zero	-.8"	1.9"	2.8"	1.8"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.2"	3.5"	2.8"	1.2"	0.0"
VELOCITY (fps)	2500	2365	2235	2109	2029	1988
ENERGY (ft. lbs.)	1388	1242	1109	988	914	878
TRAJ: 50 m. zero	-.8"	0.0"	-1.1"	-4.3"	-7.6"	-9.8"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.6"	-5.6"	-7.6"
TRAJ: 150 m. zero	-.8"	1.4"	1.8"	0.0"	-2.4"	-4.0"
TRAJ: 200 yd. zero	-.8"	2.1"	3.1"	2.0"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.5"	3.8"	3.1"	1.3"	0.0"
VELOCITY (fps)	2400	2269	2142	2021	1943	1903
ENERGY (ft. lbs.)	1279	1143	1019	907	838	804
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.7"	-8.4"	-10.8"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.8"	-6.1"	-8.3"
TRAJ: 150 m. zero	-.8"	1.6"	1.9"	0.0"	-2.6"	-4.4"
TRAJ: 200 yd. zero	-.8"	2.3"	3.4"	2.2"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.7"	4.2"	3.4"	1.5"	0.0"
VELOCITY (fps)	2300	2173	2050	1932	1857	1818
ENERGY (ft. lbs.)	1175	1049	933	829	766	734
TRAJ: 50 m. zero	-.8"	0.0"	-1.4"	-5.3"	-9.4"	-12.0"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.2"	-6.7"	-9.1"
TRAJ: 150 m. zero	-.8"	1.8"	2.1"	0.0"	-2.8"	-4.9"
TRAJ: 200 yd. zero	-.8"	2.6"	3.7"	2.4"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	3.0"	4.6"	3.7"	1.6"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2200	2077	1958	1844	1771	1733
ENERGY (ft. lbs.)	1075	958	851	755	697	667
TRAJ: 50 m. zero	-.8"	0.0"	-1.6"	-6.0"	-10.5"	-13.5"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.5"	-7.5"	-10.1"
TRAJ: 150 m. zero	-.8"	2.0"	2.4"	0.0"	-3.2"	-5.4"
TRAJ: 200 yd. zero	-.8"	2.9"	4.1"	2.6"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.4"	5.1"	4.1"	1.8"	0.0"
VELOCITY (fps)	2100	1981	1865	1755	1686	1650
ENERGY (ft. lbs.)	979	872	773	684	631	605
TRAJ: 50 m. zero	-.8"	0.0"	-1.9"	-6.8"	-11.8"	-15.0"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-3.9"	-8.2"	-11.2"
TRAJ: 150 m. zero	-.8"	2.3"	2.6"	0.0"	-3.5"	-5.9"
TRAJ: 200 yd. zero	-.8"	3.2"	4.5"	2.9"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	3.8"	5.6"	4.5"	2.0"	0.0"

### 6.5 MM (.264" Dia.) 140 GRAIN SPIRE POINT

SECTIONAL DENSITY: .287 BALLISTIC COEFFICIENT: .441

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2400	2293	2189	2089	2024	1991
ENERGY (ft. lbs.)	1791	1635	1490	1357	1274	1233
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.6"	-8.1"	-10.3"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-2.7"	-5.8"	-7.8"
TRAJ: 150 m. zero	-.8"	1.5"	1.8"	0.0"	-2.5"	-4.2"
TRAJ: 200 yd. zero	-.8"	2.2"	3.2"	2.1"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.6"	3.9"	3.2"	1.3"	0.0"
VELOCITY (fps)	2300	2196	2096	1998	1936	1903
ENERGY (ft. lbs.)	1645	1500	1366	1241	1165	1126
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-5.1"	-8.9"	-11.5"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.0"	-6.4"	-8.7"
TRAJ: 150 m. zero	-.8"	1.7"	2.1"	0.0"	-2.6"	-4.6"
TRAJ: 200 yd. zero	-.8"	2.5"	3.5"	2.2"	0.0"	-1.6"
TRAJ: 200 m. zero	-.8"	2.9"	4.4"	3.5"	1.5"	0.0"
VELOCITY (fps)	2200	2100	2002	1908	1847	1815
ENERGY (ft. lbs.)	1505	1371	1246	1132	1061	1024
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-5.7"	-10.1"	-12.8"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.3"	-7.1"	-9.6"
TRAJ: 150 m. zero	-.8"	1.9"	2.2"	0.0"	-3.0"	-5.1"
TRAJ: 200 yd. zero	-.8"	2.8"	3.9"	2.5"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.2"	4.8"	3.9"	1.7"	0.0"
VELOCITY (fps)	2100	2003	1908	1817	1759	1728
ENERGY (ft. lbs.)	1371	1248	1132	1027	962	928
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.5"	-11.2"	-14.4"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.7"	-7.8"	-10.6"
TRAJ: 150 m. zero	-.8"	2.2"	2.5"	0.0"	-3.3"	-5.6"
TRAJ: 200 yd. zero	-.8"	3.1"	4.3"	2.7"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.6"	5.3"	4.3"	1.9"	0.0"
VELOCITY (fps)	2000	1906	1815	1727	1671	1643
ENERGY (ft. lbs.)	1244	1130	1024	927	868	839
TRAJ: 50 m. zero	-.8"	0.0"	-2.0"	-7.3"	-12.7"	-16.0"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-4.2"	-8.9"	-11.8"
TRAJ: 150 m. zero	-.8"	2.5"	2.8"	0.0"	-3.7"	-6.2"
TRAJ: 200 yd. zero	-.8"	3.5"	4.9"	3.1"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	4.0"	5.9"	4.7"	1.9"	0.0"
VELOCITY (fps)	1900	1809	1722	1639	1586	1559
ENERGY (ft. lbs.)	1123	1018	922	835	782	756
TRAJ: 50 m. zero	-.8"	0.0"	-2.4"	-8.2"	-14.2"	-18.0"
TRAJ: 100 m. zero	-.8"	1.2"	0.0"	-4.6"	-9.8"	-13.2"
TRAJ: 150 m. zero	-.8"	2.8"	3.1"	0.0"	-4.1"	-6.9"
TRAJ: 200 yd. zero	-.8"	3.9"	5.4"	3.4"	0.0"	-2.4"
TRAJ: 200 m. zero	-.8"	4.5"	6.6"	5.2"	2.2"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1713	1631	1552	1502	1476
ENERGY (ft. lbs.)	1007	912	827	749	701	677
TRAJ: 50 m. zero	-.8"	0.0"	-2.7"	-9.4"	-16.0"	-20.3"
TRAJ: 100 m. zero	-.8"	1.4"	0.0"	-5.2"	-11.0"	-14.8"
TRAJ: 150 m. zero	-.8"	3.1"	3.5"	0.0"	-4.6"	-7.8"
TRAJ: 200 yd. zero	-.8"	4.4"	6.1"	3.8"	0.0"	-2.7"
TRAJ: 200 m. zero	-.8"	5.1"	7.4"	5.9"	2.5"	0.0"

**270 Caliber (.277" Dia.) 140 GRAIN BOAT TAIL SPIRE POINT**

SECTIONAL DENSITY: .261 BALLISTIC COEFFICIENT: .496

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2500	2402	2306	2214	2154	2122
ENERGY (ft. lbs.)	1943	1794	1653	1524	1443	1400
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.0"	-7.1"	-9.1"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.4"	-5.1"	-7.0"
TRAJ: 150 m. zero	-.8"	1.3"	1.6"	0.0"	-2.2"	-3.8"
TRAJ: 200 yd. zero	-.8"	2.0"	2.8"	1.8"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.3"	3.5"	2.9"	1.3"	0.0"
VELOCITY (fps)	2400	2305	2212	2122	2063	2033
ENERGY (ft. lbs.)	1791	1652	1521	1400	1323	1285
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.5"	-7.9"	-10.1"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.7"	-5.7"	-7.7"
TRAJ: 150 m. zero	-.8"	1.5"	1.8"	0.0"	-2.4"	-4.1"
TRAJ: 200 yd. zero	-.8"	2.2"	3.2"	2.0"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.5"	3.9"	3.1"	1.3"	0.0"
VELOCITY (fps)	2300	2208	2117	2030	1973	1944
ENERGY (ft. lbs.)	1645	1516	1394	1281	1210	1175
TRAJ: 50 m. zero	-.8"	0.0"	-1.4"	-5.0"	-8.9"	-11.3"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-2.9"	-6.3"	-8.4"
TRAJ: 150 m. zero	-.8"	1.7"	2.0"	0.0"	-2.7"	-4.5"
TRAJ: 200 yd. zero	-.8"	2.4"	3.5"	2.2"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.8"	4.2"	3.4"	1.4"	0.0"
VELOCITY (fps)	2200	2111	2023	1938	1884	1855
ENERGY (ft. lbs.)	1505	1386	1273	1168	1104	1070
TRAJ: 50 m. zero	-.8"	0.0"	-1.6"	-5.7"	-9.8"	-12.6"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.3"	-6.9"	-9.4"
TRAJ: 150 m. zero	-.8"	1.9"	2.2"	0.0"	-2.8"	-4.9"
TRAJ: 200 yd. zero	-.8"	2.7"	3.8"	2.4"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	3.2"	4.7"	3.7"	1.6"	0.0"
VELOCITY (fps)	2100	2013	1929	1847	1794	1766
ENERGY (ft. lbs.)	1371	1260	1157	1061	1001	970
TRAJ: 50 m. zero	-.8"	0.0"	-1.7"	-6.3"	-11.0"	-14.0"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.6"	-7.7"	-10.4"
TRAJ: 150 m. zero	-.8"	2.1"	2.5"	0.0"	-3.2"	-5.5"
TRAJ: 200 yd. zero	-.8"	3.0"	4.2"	2.7"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.5"	5.2"	4.2"	1.8"	0.0"
VELOCITY (fps)	2000	1916	1835	1756	1705	1679
ENERGY (ft. lbs.)	1244	1141	1047	959	904	877
TRAJ: 50 m. zero	-.8"	0.0"	-2.0"	-7.1"	-12.4"	-15.7"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-4.1"	-8.6"	-11.6"
TRAJ: 150 m. zero	-.8"	2.4"	2.7"	0.0"	-3.6"	-6.1"
TRAJ: 200 yd. zero	-.8"	3.4"	4.8"	3.0"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	3.9"	5.8"	4.6"	1.9"	0.0"
VELOCITY (fps)	1900	1819	1741	1666	1618	1593
ENERGY (ft. lbs.)	1123	1029	943	863	814	789
TRAJ: 50 m. zero	-.8"	0.0"	-2.3"	-8.1"	-13.9"	-17.6"
TRAJ: 100 m. zero	-.8"	1.2"	0.0"	-4.6"	-9.6"	-12.9"
TRAJ: 150 m. zero	-.8"	2.7"	3.1"	0.0"	-4.0"	-6.8"
TRAJ: 200 yd. zero	-.8"	3.8"	5.3"	3.3"	0.0"	-2.4"
TRAJ: 200 m. zero	-.8"	4.4"	6.5"	5.1"	2.2"	0.0"



**7 MM (.284" Dia.) 120 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .213 BALLISTIC COEFFICIENT: .378

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2700	2565	2435	2309	2229	2187
ENERGY (ft. lbs.)	1943	1754	1580	1421	1324	1275
TRAJ: 50 m. zero	-.8"	0.0"	-.8"	-.34"	-.61"	-.79"
TRAJ: 100 m. zero	-.8"	.4"	0.0"	-.21"	-.46"	-.62"
TRAJ: 150 m. zero	-.8"	1.1"	1.4"	0.0"	-.19"	-.33"
TRAJ: 200 yd. zero	-.8"	1.7"	2.5"	1.6"	0.0"	-.12"
TRAJ: 200 m. zero	-.8"	2.0"	3.1"	2.5"	1.1"	0.0"
VELOCITY (fps)	2800	2489	2342	2219	2141	2100
ENERGY (ft. lbs.)	1802	1625	1462	1312	1222	1175
TRAJ: 50 m. zero	-.8"	0.0"	-.9"	-.38"	-.68"	-.87"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-.23"	-.50"	-.68"
TRAJ: 150 m. zero	-.8"	1.3"	1.6"	0.0"	-.21"	-.36"
TRAJ: 200 yd. zero	-.8"	1.9"	2.8"	1.8"	0.0"	-.13"
TRAJ: 200 m. zero	-.8"	2.2"	3.4"	2.8"	1.2"	0.0"
VELOCITY (fps)	2500	2372	2249	2130	2054	2014
ENERGY (ft. lbs.)	1666	1500	1348	1209	1124	1081
TRAJ: 50 m. zero	-.8"	0.0"	-.10"	-.42"	-.75"	-.96"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-.26"	-.55"	-.75"
TRAJ: 150 m. zero	-.8"	1.4"	1.7"	0.0"	-.23"	-.40"
TRAJ: 200 yd. zero	-.8"	2.1"	3.0"	1.9"	0.0"	-.14"
TRAJ: 200 m. zero	-.8"	2.4"	3.8"	3.0"	1.3"	0.0"
VELOCITY (fps)	2400	2276	2156	2040	1967	1928
ENERGY (ft. lbs.)	1535	1381	1239	1109	1031	991
TRAJ: 50 m. zero	-.8"	0.0"	-.12"	-.47"	-.83"	-.107"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-.28"	-.60"	-.82"
TRAJ: 150 m. zero	-.8"	1.6"	1.9"	0.0"	-.25"	-.43"
TRAJ: 200 yd. zero	-.8"	2.3"	3.3"	2.1"	0.0"	-.16"
TRAJ: 200 m. zero	-.8"	2.7"	4.1"	3.3"	1.5"	0.0"
VELOCITY (fps)	2300	2180	2063	1951	1879	1842
ENERGY (ft. lbs.)	1410	1267	1134	1014	941	904
TRAJ: 50 m. zero	-.8"	0.0"	-.14"	-.53"	-.93"	-.119"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-.31"	-.67"	-.90"
TRAJ: 150 m. zero	-.8"	1.8"	2.1"	0.0"	-.28"	-.48"
TRAJ: 200 yd. zero	-.8"	2.6"	3.7"	2.4"	0.0"	-.17"
TRAJ: 200 m. zero	-.8"	3.0"	4.5"	3.6"	1.6"	0.0"
VELOCITY (fps)	2200	2083	1971	1862	1793	1757
ENERGY (ft. lbs.)	1290	1156	1035	924	857	823
TRAJ: 50 m. zero	-.8"	0.0"	-.16"	-.59"	-.103"	-.132"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-.35"	-.74"	-.100"
TRAJ: 150 m. zero	-.8"	2.0"	2.3"	0.0"	-.31"	-.53"
TRAJ: 200 yd. zero	-.8"	2.8"	4.1"	2.8"	0.0"	-.19"
TRAJ: 200 m. zero	-.8"	3.3"	5.0"	4.0"	1.7"	0.0"
VELOCITY (fps)	2100	1987	1878	1773	1707	1673
ENERGY (ft. lbs.)	1175	1052	940	838	777	746
TRAJ: 50 m. zero	-.8"	0.0"	-.18"	-.67"	-.116"	-.147"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-.38"	-.81"	-.110"
TRAJ: 150 m. zero	-.8"	2.2"	2.6"	0.0"	-.34"	-.58"
TRAJ: 200 yd. zero	-.8"	3.2"	4.5"	2.8"	0.0"	-.20"
TRAJ: 200 m. zero	-.8"	3.7"	5.5"	4.4"	1.9"	0.0"

**7 MM (.284" Dia.) 139 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .246 BALLISTIC COEFFICIENT: .396

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2500	2378	2260	2146	2073	2035
ENERGY (ft. lbs.)	1930	1746	1577	1422	1327	1278
TRAJ: 50 m. zero	-.8"	0.0"	-.10"	-.41"	-.74"	-.95"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-.25"	-.54"	-.73"
TRAJ: 150 m. zero	-.8"	1.4"	1.7"	0.0"	-.23"	-.39"
TRAJ: 200 yd. zero	-.8"	2.0"	3.0"	1.9"	0.0"	-.14"
TRAJ: 200 m. zero	-.8"	2.4"	3.7"	3.0"	1.3"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2400	2281	2167	2056	1985	1948
ENERGY (ft. lbs.)	1778	1606	1450	1305	1216	1172
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.6"	-8.2"	-10.5"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.8"	-6.0"	-8.1"
TRAJ: 150 m. zero	-.8"	1.6"	1.9"	0.0"	-2.5"	-4.3"
TRAJ: 200 yd. zero	-.8"	2.3"	3.3"	2.1"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.8"	4.1"	3.3"	1.4"	0.0"
VELOCITY (fps)	2300	2185	2074	1966	1897	1862
ENERGY (ft. lbs.)	1633	1474	1328	1193	1111	1070
TRAJ: 50 m. zero	-.8"	0.0"	-1.4"	-5.2"	-9.2"	-11.7"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.1"	-6.6"	-8.9"
TRAJ: 150 m. zero	-.8"	1.8"	2.1"	0.0"	-2.8"	-4.7"
TRAJ: 200 yd. zero	-.8"	2.5"	3.6"	2.3"	0.0"	-1.6"
TRAJ: 200 m. zero	-.8"	2.9"	4.5"	3.6"	1.5"	0.0"
VELOCITY (fps)	2200	2088	1981	1876	1810	1775
ENERGY (ft. lbs.)	1494	1346	1212	1087	1011	973
TRAJ: 50 m. zero	-.8"	0.0"	-1.6"	-5.9"	-10.2"	-13.1"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.5"	-7.3"	-9.9"
TRAJ: 150 m. zero	-.8"	2.0"	2.3"	0.0"	-3.0"	-5.2"
TRAJ: 200 yd. zero	-.8"	2.8"	4.0"	2.5"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.3"	5.0"	3.9"	1.7"	0.0"
VELOCITY (fps)	2100	1992	1888	1787	1723	1690
ENERGY (ft. lbs.)	1361	1225	1100	986	917	882
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.6"	-11.5"	-14.6"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.8"	-8.1"	-10.9"
TRAJ: 150 m. zero	-.8"	2.2"	2.6"	0.0"	-3.4"	-5.8"
TRAJ: 200 yd. zero	-.8"	3.2"	4.5"	2.8"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.7"	5.5"	4.4"	1.9"	0.0"
VELOCITY (fps)	2000	1896	1795	1699	1638	1606
ENERGY (ft. lbs.)	1235	1110	995	891	828	796
TRAJ: 50 m. zero	-.8"	0.0"	-2.1"	-7.4"	-12.9"	-16.5"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.2"	-9.0"	-12.2"
TRAJ: 150 m. zero	-.8"	2.5"	2.8"	0.0"	-3.8"	-6.5"
TRAJ: 200 yd. zero	-.8"	3.5"	4.9"	3.1"	0.0"	-2.3"
TRAJ: 200 m. zero	-.8"	4.1"	6.1"	4.9"	2.2"	0.0"

**7 MM (.284" Dia.) 154 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .273 BALLISTIC COEFFICIENT: .423

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2300	2192	2087	1986	1921	1887
ENERGY (ft. lbs.)	1809	1643	1490	1349	1262	1218
TRAJ: 50 m. zero	-.8"	0.0"	-1.4"	-5.2"	-9.1"	-11.8"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.0"	-6.5"	-8.8"
TRAJ: 150 m. zero	-.8"	1.7"	2.1"	0.0"	-2.7"	-4.7"
TRAJ: 200 yd. zero	-.8"	2.5"	3.6"	2.3"	0.0"	-1.6"
TRAJ: 200 m. zero	-.8"	2.9"	4.4"	3.5"	1.5"	0.0"
VELOCITY (fps)	2200	2095	1994	1896	1833	1800
ENERGY (ft. lbs.)	1655	1501	1360	1230	1149	1108
TRAJ: 50 m. zero	-.8"	0.0"	-1.6"	-5.8"	-10.1"	-12.9"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.4"	-7.2"	-9.7"
TRAJ: 150 m. zero	-.8"	1.9"	2.3"	0.0"	-3.0"	-5.1"
TRAJ: 200 yd. zero	-.8"	2.8"	4.0"	2.5"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.2"	4.9"	3.9"	1.7"	0.0"
VELOCITY (fps)	2100	1999	1901	1806	1745	1714
ENERGY (ft. lbs.)	1508	1367	1236	1116	1042	1005
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.5"	-11.4"	-14.4"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.8"	-8.0"	-10.8"
TRAJ: 150 m. zero	-.8"	2.2"	2.5"	0.0"	-3.4"	-5.7"
TRAJ: 200 yd. zero	-.8"	3.1"	4.4"	2.8"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.6"	5.4"	4.3"	1.8"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2000	1902	1807	1716	1659	1629
ENERGY (ft. lbs.)	1368	1237	1117	1007	941	908
TRAJ: 50 m. zero	-.8"	0.0"	-2.1"	-7.4"	-12.7"	-16.2"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.2"	-8.8"	-11.9"
TRAJ: 150 m. zero	-.8"	2.5"	2.8"	0.0"	-3.6"	-6.3"
TRAJ: 200 yd. zero	-.8"	3.5"	4.9"	3.0"	0.0"	-2.2"
TRAJ: 200 m. zero	-.8"	4.1"	6.0"	4.7"	2.1"	0.0"
VELOCITY (fps)	1900	1806	1715	1629	1574	1546
ENERGY (ft. lbs.)	1235	1116	1006	908	847	818
TRAJ: 50 m. zero	-.8"	0.0"	-2.4"	-8.3"	-14.4"	-18.2"
TRAJ: 100 m. zero	-.8"	1.2"	0.0"	-4.7"	-9.9"	-13.3"
TRAJ: 150 m. zero	-.8"	2.8"	3.1"	0.0"	-4.2"	-7.0"
TRAJ: 200 yd. zero	-.8"	3.9"	5.4"	3.4"	0.0"	-2.4"
TRAJ: 200 m. zero	-.8"	4.6"	6.7"	5.3"	2.3"	0.0"
VELOCITY (fps)	1800	1710	1624	1542	1490	1463
ENERGY (ft. lbs.)	1108	1000	902	813	759	732
TRAJ: 50 m. zero	-.8"	0.0"	-2.7"	-9.5"	-16.3"	-20.6"
TRAJ: 100 m. zero	-.8"	1.4"	0.0"	-5.3"	-11.2"	-15.0"
TRAJ: 150 m. zero	-.8"	3.2"	3.6"	0.0"	-4.6"	-7.9"
TRAJ: 200 yd. zero	-.8"	4.5"	6.1"	3.9"	0.0"	-2.8"
TRAJ: 200 m. zero	-.8"	5.2"	7.5"	6.0"	2.6"	0.0"
VELOCITY (fps)	1700	1615	1534	1456	1407	1382
ENERGY (ft. lbs.)	988	892	805	725	677	653
TRAJ: 50 m. zero	-.8"	0.0"	-3.2"	-10.9"	-18.5"	-23.3"
TRAJ: 100 m. zero	-.8"	1.6"	0.0"	-6.1"	-12.7"	-16.9"
TRAJ: 150 m. zero	-.8"	3.6"	4.1"	0.0"	-5.2"	-8.8"
TRAJ: 200 yd. zero	-.8"	5.1"	6.9"	4.3"	0.0"	-3.0"
TRAJ: 200 m. zero	-.8"	5.8"	8.5"	6.6"	2.8"	0.0"

**30 Caliber (.308" Dia.) 110 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .166 BALLISTIC COEFFICIENT: .249

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2800	2593	2396	2209	2092	2032
ENERGY (ft. lbs.)	1915	1643	1403	1192	1069	1009
TRAJ: 50 m. zero	-.8"	0.0"	-7.7"	-3.4"	-6.2"	-8.1"
TRAJ: 100 m. zero	-.8"	.4"	0.0"	-2.2"	-4.8"	-6.5"
TRAJ: 150 m. zero	-.8"	1.1"	1.5"	0.0"	-2.0"	-3.5"
TRAJ: 200 yd. zero	-.8"	1.7"	2.6"	1.7"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.0"	3.3"	2.7"	1.2"	0.0"
VELOCITY (fps)	2700	2498	2306	2124	2010	1952
ENERGY (ft. lbs.)	1781	1525	1299	1102	987	931
TRAJ: 50 m. zero	-.8"	0.0"	-9.9"	-3.7"	-6.9"	-8.9"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.4"	-5.2"	-7.1"
TRAJ: 150 m. zero	-.8"	1.3"	1.8"	0.0"	-2.2"	-3.8"
TRAJ: 200 yd. zero	-.8"	1.9"	2.9"	1.9"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.2"	3.6"	2.9"	1.3"	0.0"
VELOCITY (fps)	2600	2403	2218	2039	1929	1872
ENERGY (ft. lbs.)	1652	1411	1200	1016	909	856
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.2"	-7.6"	-9.8"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.6"	-5.6"	-7.7"
TRAJ: 150 m. zero	-.8"	1.4"	1.8"	0.0"	-2.4"	-4.2"
TRAJ: 200 yd. zero	-.8"	2.1"	3.1"	2.0"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.5"	3.9"	3.2"	1.4"	0.0"
VELOCITY (fps)	2500	2308	2127	1955	1847	1793
ENERGY (ft. lbs.)	1527	1301	1105	934	833	785
TRAJ: 50 m. zero	-.8"	0.0"	-1.1"	-4.6"	-8.4"	-10.8"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.9"	-6.2"	-8.5"
TRAJ: 150 m. zero	-.8"	1.6"	1.9"	0.0"	-2.7"	-4.6"
TRAJ: 200 yd. zero	-.8"	2.3"	3.4"	2.2"	0.0"	-1.6"
TRAJ: 200 m. zero	-.8"	2.7"	4.3"	3.5"	1.5"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2400	2214	2037	1871	1767	1714
ENERGY (ft. lbs.)	1407	1198	1014	855	763	718
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-5.2"	-9.3"	-12.0"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.1"	-6.8"	-9.3"
TRAJ: 150 m. zero	-.8"	1.8"	2.1"	0.0"	-2.9"	-5.0"
TRAJ: 200 yd. zero	-.8"	2.6"	3.7"	2.4"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.0"	4.7"	3.8"	1.7"	0.0"
VELOCITY (fps)	2300	2119	1948	1787	1687	1637
ENERGY (ft. lbs.)	1292	1097	927	780	695	655
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.8"	-10.4"	-13.3"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.5"	-7.5"	-10.2"
TRAJ: 150 m. zero	-.8"	2.0"	2.3"	0.0"	-3.2"	-5.5"
TRAJ: 200 yd. zero	-.8"	2.8"	4.1"	2.7"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.3"	5.1"	4.2"	1.8"	0.0"
VELOCITY (fps)	2200	2025	1859	1704	1609	1561
ENERGY (ft. lbs.)	1182	1002	844	709	633	595
TRAJ: 50 m. zero	-.8"	0.0"	-1.7"	-6.5"	-11.6"	-14.9"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.8"	-8.3"	-11.3"
TRAJ: 150 m. zero	-.8"	2.2"	2.6"	0.0"	-3.5"	-6.1"
TRAJ: 200 yd. zero	-.8"	3.2"	4.6"	2.9"	0.0"	-2.2"
TRAJ: 200 m. zero	-.8"	3.7"	5.7"	4.6"	2.0"	0.0"
VELOCITY (fps)	2100	1930	1770	1622	1531	1486
ENERGY (ft. lbs.)	1077	910	765	643	573	539
TRAJ: 50 m. zero	-.8"	0.0"	-2.0"	-7.3"	-13.0"	-16.6"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-4.3"	-9.2"	-12.5"
TRAJ: 150 m. zero	-.8"	2.5"	2.9"	0.0"	-4.0"	-6.7"
TRAJ: 200 yd. zero	-.8"	3.6"	5.1"	3.3"	0.0"	-2.3"
TRAJ: 200 m. zero	-.8"	4.2"	6.3"	5.1"	2.2"	0.0"

**30 Caliber (.308" Dia.) 130 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .196 BALLISTIC COEFFICIENT: .299

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2700	2531	2368	2213	2115	2065
ENERGY (ft. lbs.)	2105	1850	1619	1414	1292	1231
TRAJ: 50 m. zero	-.8"	0.0"	-.8"	-3.6"	-6.5"	-8.4"
TRAJ: 100 m. zero	-.8"	.4"	0.0"	-2.2"	-4.9"	-6.6"
TRAJ: 150 m. zero	-.8"	1.2"	1.5"	0.0"	-2.1"	-3.6"
TRAJ: 200 yd. zero	-.8"	1.8"	2.7"	1.7"	0.0"	-1.2"
TRAJ: 200 m. zero	-.8"	2.1"	3.3"	2.7"	1.2"	0.0"
VELOCITY (fps)	2600	2435	2277	2126	2031	1982
ENERGY (ft. lbs.)	1952	1712	1497	1305	1191	1134
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.0"	-7.2"	-9.2"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.5"	-5.3"	-7.2"
TRAJ: 150 m. zero	-.8"	1.3"	1.7"	0.0"	-2.3"	-3.9"
TRAJ: 200 yd. zero	-.8"	2.0"	2.9"	1.9"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.3"	3.6"	3.0"	1.3"	0.0"
VELOCITY (fps)	2500	2340	2186	2039	1947	1899
ENERGY (ft. lbs.)	1805	1581	1380	1200	1095	1041
TRAJ: 50 m. zero	-.8"	0.0"	-1.1"	-4.4"	-7.9"	-10.2"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.7"	-5.8"	-7.9"
TRAJ: 150 m. zero	-.8"	1.5"	1.8"	0.0"	-2.5"	-4.3"
TRAJ: 200 yd. zero	-.8"	2.2"	3.2"	2.1"	0.0"	-1.5"
TRAJ: 200 m. zero	-.8"	2.6"	4.0"	3.2"	1.4"	0.0"
VELOCITY (fps)	2400	2244	2095	1953	1863	1816
ENERGY (ft. lbs.)	1663	1454	1267	1101	1002	952
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-4.9"	-8.8"	-11.4"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.0"	-6.4"	-8.7"
TRAJ: 150 m. zero	-.8"	1.7"	2.0"	0.0"	-2.7"	-4.7"
TRAJ: 200 yd. zero	-.8"	2.4"	3.5"	2.3"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	2.9"	4.4"	3.6"	1.6"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2300	2149	2004	1866	1779	1734
ENERGY (ft. lbs.)	1527	1333	1180	1005	914	868
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.6"	-9.8"	-12.6"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.3"	-7.1"	-9.6"
TRAJ: 150 m. zero	-.8"	1.9"	2.2"	0.0"	-3.0"	-5.2"
TRAJ: 200 yd. zero	-.8"	2.7"	3.9"	2.5"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.2"	4.8"	3.9"	1.7"	0.0"
VELOCITY (fps)	2200	2053	1913	1780	1696	1654
ENERGY (ft. lbs.)	1397	1217	1057	915	831	790
TRAJ: 50 m. zero	-.8"	0.0"	-1.7"	-6.2"	-11.0"	-14.0"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.6"	-7.8"	-10.6"
TRAJ: 150 m. zero	-.8"	2.1"	2.5"	0.0"	-3.3"	-5.7"
TRAJ: 200 yd. zero	-.8"	3.0"	4.3"	2.8"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.5"	5.3"	4.3"	1.8"	0.0"
VELOCITY (fps)	2100	1958	1822	1695	1615	1575
ENERGY (ft. lbs.)	1273	1107	959	830	753	716
TRAJ: 50 m. zero	-.8"	0.0"	-1.9"	-7.0"	-12.3"	-15.8"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-4.0"	-8.7"	-11.7"
TRAJ: 150 m. zero	-.8"	2.3"	2.7"	0.0"	-3.7"	-6.3"
TRAJ: 200 yd. zero	-.8"	3.4"	4.8"	3.1"	0.0"	-2.2"
TRAJ: 200 m. zero	-.8"	3.9"	5.9"	4.8"	2.0"	0.0"
VELOCITY (fps)	2000	1863	1732	1611	1535	1497
ENERGY (ft. lbs.)	1155	1002	866	749	680	647
TRAJ: 50 m. zero	-.8"	0.0"	-2.2"	-7.9"	-13.8"	-17.5"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.5"	-9.7"	-13.0"
TRAJ: 150 m. zero	-.8"	2.8"	3.0"	0.0"	-4.1"	-7.0"
TRAJ: 200 yd. zero	-.8"	3.8"	5.3"	3.4"	0.0"	-2.4"
TRAJ: 200 m. zero	-.8"	4.4"	6.5"	5.3"	2.3"	0.0"

### 30 Caliber (.308" Dia.) 150 GRAIN BOAT TAIL FULL METAL JACKET

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .453

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2600	2490	2383	2279	2212	2177
ENERGY (ft. lbs.)	2252	2066	1892	1730	1630	1579
TRAJ: 50 m. zero	-.8"	0.0"	-.9"	-3.6"	-6.5"	-8.4"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.2"	-4.8"	-6.6"
TRAJ: 150 m. zero	-.8"	1.2"	1.5"	0.0"	-2.0"	-3.5"
TRAJ: 200 yd. zero	-.8"	1.8"	2.7"	1.7"	0.0"	-1.2"
TRAJ: 200 m. zero	-.8"	2.1"	3.3"	2.7"	1.2"	0.0"
VELOCITY (fps)	2500	2393	2289	2188	2123	2089
ENERGY (ft. lbs.)	2082	1908	1746	1595	1502	1454
TRAJ: 50 m. zero	-.8"	0.0"	-1.0"	-4.1"	-7.2"	-9.3"
TRAJ: 100 m. zero	-.8"	.5"	0.0"	-2.5"	-5.3"	-7.2"
TRAJ: 150 m. zero	-.8"	1.4"	1.7"	0.0"	-2.2"	-3.8"
TRAJ: 200 yd. zero	-.8"	2.0"	2.9"	1.9"	0.0"	-1.3"
TRAJ: 200 m. zero	-.8"	2.3"	3.6"	2.9"	1.3"	0.0"
VELOCITY (fps)	2400	2296	2195	2097	2034	2001
ENERGY (ft. lbs.)	1919	1756	1605	1465	1378	1334
TRAJ: 50 m. zero	-.8"	0.0"	-1.2"	-4.5"	-8.0"	-10.3"
TRAJ: 100 m. zero	-.8"	.6"	0.0"	-2.7"	-5.6"	-7.8"
TRAJ: 150 m. zero	-.8"	1.5"	1.8"	0.0"	-2.4"	-4.2"
TRAJ: 200 yd. zero	-.8"	2.2"	3.2"	2.0"	0.0"	-1.4"
TRAJ: 200 m. zero	-.8"	2.6"	3.9"	3.2"	1.4"	0.0"
VELOCITY (fps)	2300	2199	2101	2006	1945	1913
ENERGY (ft. lbs.)	1762	1611	1471	1341	1260	1219
TRAJ: 50 m. zero	-.8"	0.0"	-1.3"	-5.1"	-8.9"	-11.4"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.0"	-6.4"	-8.6"
TRAJ: 150 m. zero	-.8"	1.7"	2.0"	0.0"	-2.7"	-4.6"
TRAJ: 200 yd. zero	-.8"	2.5"	3.5"	2.2"	0.0"	-1.6"
TRAJ: 200 m. zero	-.8"	2.9"	4.3"	3.5"	1.5"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2200	2102	2007	1915	1856	1825
ENERGY (ft. lbs.)	1612	1472	1342	1222	1148	1110
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.7"	-10.0"	-12.7"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.3"	-7.0"	-9.5"
TRAJ: 150 m. zero	-.8"	1.9"	2.2"	0.0"	-2.9"	-5.0"
TRAJ: 200 yd. zero	-.8"	2.7"	3.9"	2.4"	0.0"	-1.8"
TRAJ: 200 m. zero	-.8"	3.2"	4.8"	3.8"	1.7"	0.0"
VELOCITY (fps)	2100	2005	1913	1824	1767	1737
ENERGY (ft. lbs.)	1489	1339	1219	1108	1040	1005
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.4"	-11.2"	-14.2"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.7"	-7.8"	-10.6"
TRAJ: 150 m. zero	-.8"	2.2"	2.5"	0.0"	-3.3"	-5.6"
TRAJ: 200 yd. zero	-.8"	3.1"	4.3"	2.7"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.6"	5.3"	4.2"	1.8"	0.0"
VELOCITY (fps)	2000	1909	1820	1734	1679	1651
ENERGY (ft. lbs.)	1333	1214	1104	1002	939	908
TRAJ: 50 m. zero	-.8"	0.0"	-2.1"	-7.3"	-12.7"	-16.0"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.2"	-8.8"	-11.8"
TRAJ: 150 m. zero	-.8"	2.5"	2.8"	0.0"	-3.7"	-6.2"
TRAJ: 200 yd. zero	-.8"	3.5"	4.9"	3.1"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	4.0"	5.9"	4.7"	2.0"	0.0"
VELOCITY (fps)	1900	1812	1726	1645	1593	1567
ENERGY (ft. lbs.)	1203	1094	992	902	845	818
TRAJ: 50 m. zero	-.8"	0.0"	-2.4"	-8.3"	-14.3"	-17.9"
TRAJ: 100 m. zero	-.8"	1.2"	0.0"	-4.6"	-9.8"	-13.0"
TRAJ: 150 m. zero	-.8"	2.8"	3.1"	0.0"	-4.1"	-6.8"
TRAJ: 200 yd. zero	-.8"	3.9"	5.4"	3.4"	0.0"	-2.3"
TRAJ: 200 m. zero	-.8"	4.5"	6.5"	5.2"	2.1"	0.0"

**30 Caliber (.308" Dia.) 150 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .226 BALLISTIC COEFFICIENT: .358

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2300	2173	2050	1933	1858	1819
ENERGY (ft. lbs.)	1762	1573	1400	1245	1150	1102
TRAJ: 50 m. zero	-.8"	0.0"	-1.4"	-5.3"	-9.4"	-12.0"
TRAJ: 100 m. zero	-.8"	.7"	0.0"	-3.1"	-6.7"	-9.1"
TRAJ: 150 m. zero	-.8"	1.8"	2.1"	0.0"	-2.8"	-4.9"
TRAJ: 200 yd. zero	-.8"	2.6"	3.7"	2.4"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	3.0"	4.6"	3.7"	1.6"	0.0"
VELOCITY (fps)	2200	2077	1958	1844	1772	1735
ENERGY (ft. lbs.)	1612	1437	1277	1133	1046	1003
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.0"	-10.5"	-13.4"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.5"	-7.4"	-10.0"
TRAJ: 150 m. zero	-.8"	2.0"	2.4"	0.0"	-3.1"	-5.3"
TRAJ: 200 yd. zero	-.8"	2.9"	4.1"	2.8"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.4"	5.0"	4.0"	1.7"	0.0"
VELOCITY (fps)	2100	1981	1866	1756	1687	1652
ENERGY (ft. lbs.)	1469	1307	1160	1027	948	909
TRAJ: 50 m. zero	-.8"	0.0"	-1.9"	-6.7"	-11.7"	-14.9"
TRAJ: 100 m. zero	-.8"	1.0"	0.0"	-3.9"	-8.3"	-11.1"
TRAJ: 150 m. zero	-.8"	2.3"	2.6"	0.0"	-3.5"	-5.9"
TRAJ: 200 yd. zero	-.8"	3.2"	4.5"	2.9"	0.0"	-2.0"
TRAJ: 200 m. zero	-.8"	3.7"	5.6"	4.4"	1.9"	0.0"
VELOCITY (fps)	2000	1885	1774	1669	1603	1570
ENERGY (ft. lbs.)	1333	1184	1048	928	856	821
TRAJ: 50 m. zero	-.8"	0.0"	-2.1"	-7.6"	-13.2"	-16.7"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.3"	-9.2"	-12.4"
TRAJ: 150 m. zero	-.8"	2.6"	2.9"	0.0"	-3.9"	-6.5"
TRAJ: 200 yd. zero	-.8"	3.6"	5.1"	3.2"	0.0"	-2.2"
TRAJ: 200 m. zero	-.8"	4.2"	6.2"	4.9"	2.1"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1900	1789	1683	1584	1521	1489
ENERGY (ft. lbs.)	1203	1066	944	836	771	739
TRAJ: 50 m. zero	-.8"	0.0"	-2.5"	-8.6"	-14.9"	-18.9"
TRAJ: 100 m. zero	-.8"	1.3"	0.0"	-4.8"	-10.3"	-13.9"
TRAJ: 150 m. zero	-.8"	2.9"	3.3"	0.0"	-4.4"	-7.4"
TRAJ: 200 yd. zero	-.8"	4.1"	5.7"	3.6"	0.0"	-2.6"
TRAJ: 200 m. zero	-.8"	4.7"	7.0"	5.6"	2.4"	0.0"
VELOCITY (fps)	1800	1694	1594	1500	1440	1410
ENERGY (ft. lbs.)	1079	956	846	750	691	662
TRAJ: 50 m. zero	-.8"	0.0"	-2.8"	-9.7"	-16.8"	-21.3"
TRAJ: 100 m. zero	-.8"	1.4"	0.0"	-5.4"	-11.6"	-15.6"
TRAJ: 150 m. zero	-.8"	3.3"	3.7"	0.0"	-4.9"	-8.3"
TRAJ: 200 yd. zero	-.8"	4.6"	6.4"	4.1"	0.0"	-2.8"
TRAJ: 200 m. zero	-.8"	5.3"	7.8"	6.2"	2.6"	0.0"
VELOCITY (fps)	1700	1600	1505	1416	1360	1332
ENERGY (ft. lbs.)	963	853	755	668	616	591
TRAJ: 50 m. zero	-.8"	0.0"	-3.3"	-11.2"	-19.1"	-24.2"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-6.2"	-13.0"	-17.5"
TRAJ: 150 m. zero	-.8"	3.7"	4.2"	0.0"	-5.5"	-9.2"
TRAJ: 200 yd. zero	-.8"	5.2"	7.2"	4.5"	0.0"	-3.2"
TRAJ: 200 m. zero	-.8"	6.1"	8.8"	7.0"	3.0"	0.0"

### 30 Caliber (.308" Dia.) 168 GRAIN BOAT TAIL HOLLOW POINT

SECTIONAL DENSITY: .253 BALLISTIC COEFFICIENT: .505

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2200	2112	2026	1943	1889	1861
ENERGY (ft. lbs.)	1806	1684	1532	1409	1331	1292
TRAJ: 50 m. zero	-.8"	0.0"	-1.5"	-5.6"	-9.8"	-12.5"
TRAJ: 100 m. zero	-.8"	.8"	0.0"	-3.2"	-6.9"	-9.3"
TRAJ: 150 m. zero	-.8"	1.9"	2.2"	0.0"	-2.9"	-4.9"
TRAJ: 200 yd. zero	-.8"	2.7"	3.8"	2.4"	0.0"	-1.7"
TRAJ: 200 m. zero	-.8"	3.1"	4.7"	3.7"	1.6"	0.0"
VELOCITY (fps)	2100	2015	1932	1851	1799	1772
ENERGY (ft. lbs.)	1646	1515	1393	1278	1208	1172
TRAJ: 50 m. zero	-.8"	0.0"	-1.8"	-6.4"	-11.0"	-14.0"
TRAJ: 100 m. zero	-.8"	.9"	0.0"	-3.7"	-7.7"	-10.3"
TRAJ: 150 m. zero	-.8"	2.1"	2.5"	0.0"	-3.2"	-5.4"
TRAJ: 200 yd. zero	-.8"	3.0"	4.2"	2.7"	0.0"	-1.9"
TRAJ: 200 m. zero	-.8"	3.5"	5.2"	4.1"	1.8"	0.0"
VELOCITY (fps)	2000	1918	1837	1760	1710	1684
ENERGY (ft. lbs.)	1493	1373	1259	1156	1091	1058
TRAJ: 50 m. zero	-.8"	0.0"	-2.1"	-7.2"	-12.4"	-15.7"
TRAJ: 100 m. zero	-.8"	1.1"	0.0"	-4.0"	-8.5"	-11.5"
TRAJ: 150 m. zero	-.8"	2.4"	2.7"	0.0"	-3.6"	-6.1"
TRAJ: 200 yd. zero	-.8"	3.4"	4.7"	3.0"	0.0"	-2.1"
TRAJ: 200 m. zero	-.8"	3.9"	5.8"	4.6"	2.0"	0.0"
VELOCITY (fps)	1900	1821	1743	1670	1622	1598
ENERGY (ft. lbs.)	1347	1237	1134	1041	982	953
TRAJ: 50 m. zero	-.8"	0.0"	-2.4"	-8.1"	-14.0"	-17.6"
TRAJ: 100 m. zero	-.8"	1.2"	0.0"	-4.5"	-9.6"	-12.8"
TRAJ: 150 m. zero	-.8"	2.7"	3.0"	0.0"	-4.1"	-6.8"
TRAJ: 200 yd. zero	-.8"	3.8"	5.3"	3.4"	0.0"	-2.3"
TRAJ: 200 m. zero	-.8"	4.4"	6.4"	5.1"	2.1"	0.0"
VELOCITY (fps)	1800	1724	1651	1581	1536	1513
ENERGY (ft. lbs.)	1209	1109	1017	933	880	854
TRAJ: 50 m. zero	-.8"	0.0"	-2.7"	-9.2"	-15.8"	-19.9"
TRAJ: 100 m. zero	-.8"	1.4"	0.0"	-5.1"	-10.8"	-14.4"
TRAJ: 150 m. zero	-.8"	3.1"	3.4"	0.0"	-4.5"	-7.5"
TRAJ: 200 yd. zero	-.8"	4.3"	5.9"	3.7"	0.0"	-2.6"
TRAJ: 200 m. zero	-.8"	5.0"	7.2"	5.7"	2.4"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1700	1628	1559	1493	1451	1429
ENERGY (ft. lbs.)	1078	989	907	832	786	762
TRAJ: 50 m. zero	-.8"	0.0"	-3.1"	-10.5"	-17.8"	-22.5"
TRAJ: 100 m. zero	-.8"	1.6"	0.0"	-5.8"	-12.1"	-16.2"
TRAJ: 150 m. zero	-.8"	3.5"	3.9"	0.0"	-5.0"	-8.4"
TRAJ: 200 yd. zero	-.8"	4.9"	6.6"	4.1"	0.0"	-2.9"
TRAJ: 200 m. zero	-.8"	5.6"	8.1"	6.3"	2.7"	0.0"
VELOCITY (fps)	1600	1533	1467	1405	1365	1345
ENERGY (ft. lbs.)	955	877	803	737	695	675
TRAJ: 50 m. zero	-.8"	0.0"	-3.7"	-12.2"	-20.6"	-25.8"
TRAJ: 100 m. zero	-.8"	1.9"	0.0"	-6.5"	-13.8"	-18.3"
TRAJ: 150 m. zero	-.8"	4.1"	4.4"	0.0"	-5.7"	-9.5"
TRAJ: 200 yd. zero	-.8"	5.6"	7.6"	4.7"	0.0"	-3.2"
TRAJ: 200 m. zero	-.8"	6.5"	9.2"	7.2"	3.0"	0.0"

**38 Caliber (.357" Dia.) 158 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .177 BALLISTIC COEFFICIENT: .155

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2000	1742	1515	1318	1211	1164
ENERGY (ft. lbs.)	1404	1065	805	610	515	475
TRAJ: 50 m. zero	-.8"	0.0"	-2.6"	-9.8"	-17.6"	-22.8"
TRAJ: 100 m. zero	-.8"	1.3"	0.0"	-5.8"	-12.7"	-17.4"
TRAJ: 150 m. zero	-.8"	3.3"	3.9"	0.0"	-5.6"	-9.6"
TRAJ: 200 yd. zero	-.8"	4.8"	7.0"	4.6"	0.0"	-3.5"
TRAJ: 200 m. zero	-.8"	5.7"	8.7"	7.3"	3.3"	0.0"
VELOCITY (fps)	1900	1653	1437	1255	1160	1121
ENERGY (ft. lbs.)	1267	959	725	553	472	441
TRAJ: 50 m. zero	-.8"	0.0"	-3.0"	-11.0"	-19.7"	-25.3"
TRAJ: 100 m. zero	-.8"	1.5"	0.0"	-6.4"	-14.1"	-19.2"
TRAJ: 150 m. zero	-.8"	3.7"	4.3"	0.0"	-6.2"	-10.6"
TRAJ: 200 yd. zero	-.8"	5.4"	7.8"	5.2"	0.0"	-3.7"
TRAJ: 200 m. zero	-.8"	6.3"	9.6"	8.0"	3.4"	0.0"
VELOCITY (fps)	1800	1585	1361	1195	1116	1081
ENERGY (ft. lbs.)	1137	859	650	501	437	410
TRAJ: 50 m. zero	-.8"	0.0"	-3.4"	-12.4"	-21.9"	-28.3"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-7.2"	-15.6"	-21.4"
TRAJ: 150 m. zero	-.8"	4.2"	4.9"	0.0"	-6.7"	-11.6"
TRAJ: 200 yd. zero	-.8"	6.0"	8.6"	5.5"	0.0"	-4.2"
TRAJ: 200 m. zero	-.8"	7.1"	10.7"	8.8"	3.9"	0.0"
VELOCITY (fps)	1700	1478	1288	1144	1076	1046
ENERGY (ft. lbs.)	1014	767	582	459	406	384
TRAJ: 50 m. zero	-.8"	0.0"	-3.9"	-14.0"	-24.6"	-31.5"
TRAJ: 100 m. zero	-.8"	2.0"	0.0"	-8.1"	-17.3"	-23.5"
TRAJ: 150 m. zero	-.8"	4.7"	5.4"	0.0"	-7.4"	-12.7"
TRAJ: 200 yd. zero	-.8"	6.7"	9.5"	6.1"	0.0"	-4.5"
TRAJ: 200 m. zero	-.8"	7.9"	11.8"	9.6"	4.2"	0.0"
VELOCITY (fps)	1600	1391	1218	1097	1039	1013
ENERGY (ft. lbs.)	898	679	521	422	379	360
TRAJ: 50 m. zero	-.8"	0.0"	-4.5"	-15.9"	-27.6"	-35.1"
TRAJ: 100 m. zero	-.8"	2.3"	0.0"	-9.0"	-19.2"	-25.9"
TRAJ: 150 m. zero	-.8"	5.3"	6.1"	0.0"	-8.1"	-13.8"
TRAJ: 200 yd. zero	-.8"	7.6"	10.5"	6.7"	0.0"	-4.8"
TRAJ: 200 m. zero	-.8"	8.8"	13.0"	10.4"	4.5"	0.0"
VELOCITY (fps)	1500	1306	1156	1055	1005	982
ENERGY (ft. lbs.)	790	599	469	391	354	338
TRAJ: 50 m. zero	-.8"	0.0"	-5.3"	-18.0"	-30.9"	-39.1"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-10.0"	-21.2"	-28.5"
TRAJ: 150 m. zero	-.8"	6.0"	6.7"	0.0"	-8.9"	-15.0"
TRAJ: 200 yd. zero	-.8"	8.5"	11.6"	7.3"	0.0"	-5.3"
TRAJ: 200 m. zero	-.8"	9.8"	14.3"	11.3"	4.9"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1225	1102	1017	973	952
ENERGY (ft. lbs.)	688	527	426	363	332	318
TRAJ: 50 m. zero	-.8"	0.0"	-6.0"	-20.1"	-34.4"	-43.6"
TRAJ: 100 m. zero	-.8"	3.0"	0.0"	-11.0"	-23.3"	-31.5"
TRAJ: 150 m. zero	-.8"	6.7"	7.4"	0.0"	-9.8"	-16.7"
TRAJ: 200 yd. zero	-.8"	9.4"	12.8"	8.1"	0.0"	-5.9"
TRAJ: 200 m. zero	-.8"	10.9"	15.8"	12.6"	5.5"	0.0"
VELOCITY (fps)	1300	1153	1053	980	941	921
ENERGY (ft. lbs.)	593	467	389	337	311	298
TRAJ: 50 m. zero	-.8"	0.0"	-6.9"	-22.8"	-38.7"	-49.0"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.4"	-26.0"	-35.2"
TRAJ: 150 m. zero	-.8"	7.6"	8.3"	0.0"	-10.8"	-18.5"
TRAJ: 200 yd. zero	-.8"	10.6"	14.3"	8.9"	0.0"	-6.6"
TRAJ: 200 m. zero	-.8"	12.3"	17.6"	13.9"	6.1"	0.0"
VELOCITY (fps)	1200	1086	1005	943	906	888
ENERGY (ft. lbs.)	505	414	354	312	288	277
TRAJ: 50 m. zero	-.8"	0.0"	-7.8"	-25.7"	-43.8"	-55.0"
TRAJ: 100 m. zero	-.8"	3.9"	0.0"	-13.9"	-29.4"	-39.2"
TRAJ: 150 m. zero	-.8"	8.6"	9.3"	0.0"	-12.4"	-20.6"
TRAJ: 200 yd. zero	-.8"	12.0"	16.1"	10.2"	0.0"	-7.0"
TRAJ: 200 m. zero	-.8"	13.8"	19.6"	15.5"	6.5"	0.0"
VELOCITY (fps)	1100	1016	952	897	864	847
ENERGY (ft. lbs.)	425	362	318	282	262	252
TRAJ: 50 m. zero	-.8"	0.0"	-9.1"	-29.7"	-49.9"	-62.9"
TRAJ: 100 m. zero	-.8"	4.6"	0.0"	-15.9"	-33.2"	-44.6"
TRAJ: 150 m. zero	-.8"	9.9"	10.7"	0.0"	-13.7"	-23.3"
TRAJ: 200 yd. zero	-.8"	13.7"	18.2"	11.2"	0.0"	-8.3"
TRAJ: 200 m. zero	-.8"	15.7"	22.3"	17.5"	7.6"	0.0"

### 38 Caliber (.357" Dia.) 158 GRAIN JACKETED FLAT POINT

SECTIONAL DENSITY: .177 BALLISTIC COEFFICIENT: .153

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2000	1739	1509	1311	1204	1158
ENERGY (ft. lbs.)	1404	1061	799	603	509	471
TRAJ: 50 m. zero	-.8"	0.0"	-2.6"	-9.9"	-17.7"	-22.9"
TRAJ: 100 m. zero	-.8"	1.3"	0.0"	-5.8"	-12.8"	-17.5"
TRAJ: 150 m. zero	-.8"	3.3"	3.9"	0.0"	-5.6"	-9.7"
TRAJ: 200 yd. zero	-.8"	4.9"	7.0"	4.6"	0.0"	-3.5"
TRAJ: 200 m. zero	-.8"	5.7"	8.8"	7.3"	3.2"	0.0"
VELOCITY (fps)	1900	1650	1432	1248	1155	1115
ENERGY (ft. lbs.)	1267	955	720	547	468	436
TRAJ: 50 m. zero	-.8"	0.0"	-3.0"	-11.1"	-19.8"	-25.6"
TRAJ: 100 m. zero	-.8"	1.5"	0.0"	-6.5"	-14.2"	-19.4"
TRAJ: 150 m. zero	-.8"	3.7"	4.4"	0.0"	-6.1"	-10.7"
TRAJ: 200 yd. zero	-.8"	5.4"	7.8"	5.1"	0.0"	-3.9"
TRAJ: 200 m. zero	-.8"	6.4"	9.7"	8.0"	3.6"	0.0"
VELOCITY (fps)	1800	1563	1356	1190	1111	1076
ENERGY (ft. lbs.)	1137	857	645	497	433	406
TRAJ: 50 m. zero	-.8"	0.0"	-3.4"	-12.5"	-22.1"	-28.5"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-7.3"	-15.7"	-21.5"
TRAJ: 150 m. zero	-.8"	4.2"	4.9"	0.0"	-6.8"	-11.8"
TRAJ: 200 yd. zero	-.8"	6.1"	8.6"	5.6"	0.0"	-4.3"
TRAJ: 200 m. zero	-.8"	7.1"	10.8"	8.9"	4.0"	0.0"
VELOCITY (fps)	1700	1476	1284	1139	1072	1042
ENERGY (ft. lbs.)	1014	765	579	455	403	381
TRAJ: 50 m. zero	-.8"	0.0"	-4.0"	-14.2"	-24.7"	-31.7"
TRAJ: 100 m. zero	-.8"	2.0"	0.0"	-8.2"	-17.4"	-23.6"
TRAJ: 150 m. zero	-.8"	4.8"	5.5"	0.0"	-7.4"	-12.6"
TRAJ: 200 yd. zero	-.8"	6.8"	9.5"	6.1"	0.0"	-4.5"
TRAJ: 200 m. zero	-.8"	7.9"	11.8"	9.5"	4.2"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1389	1214	1094	1035	1009
ENERGY (ft. lbs.)	898	677	517	420	376	357
TRAJ: 50 m. zero	-.8"	0.0"	-4.8"	-15.9"	-27.8"	-35.4"
TRAJ: 100 m. zero	-.8"	2.3"	0.0"	-9.0"	-19.4"	-26.1"
TRAJ: 150 m. zero	-.8"	5.3"	6.0"	0.0"	-8.4"	-14.1"
TRAJ: 200 yd. zero	-.8"	7.6"	10.6"	8.9"	0.0"	-4.9"
TRAJ: 200 m. zero	-.8"	8.9"	13.1"	10.6"	4.5"	0.0"
VELOCITY (fps)	1500	1304	1153	1052	1002	978
ENERGY (ft. lbs.)	790	597	467	388	352	336
TRAJ: 50 m. zero	-.8"	0.0"	-5.3"	-18.1"	-31.0"	-39.5"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-10.1"	-21.2"	-28.9"
TRAJ: 150 m. zero	-.8"	6.0"	6.7"	0.0"	-8.9"	-15.4"
TRAJ: 200 yd. zero	-.8"	8.5"	11.6"	7.3"	0.0"	-5.6"
TRAJ: 200 m. zero	-.8"	9.9"	14.5"	11.6"	5.2"	0.0"
VELOCITY (fps)	1400	1223	1099	1014	970	949
ENERGY (ft. lbs.)	688	525	424	361	330	316
TRAJ: 50 m. zero	-.8"	0.0"	-6.1"	-20.2"	-34.6"	-43.8"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.1"	-23.4"	-31.5"
TRAJ: 150 m. zero	-.8"	6.8"	7.4"	0.0"	-9.8"	-16.7"
TRAJ: 200 yd. zero	-.8"	9.5"	12.8"	8.1"	0.0"	-5.9"
TRAJ: 200 m. zero	-.8"	11.0"	15.8"	12.6"	5.4"	0.0"
VELOCITY (fps)	1300	1151	1051	978	938	918
ENERGY (ft. lbs.)	593	465	388	336	309	296
TRAJ: 50 m. zero	-.8"	0.0"	-6.8"	-22.7"	-38.9"	-49.2"
TRAJ: 100 m. zero	-.8"	3.4"	0.0"	-12.4"	-26.3"	-35.4"
TRAJ: 150 m. zero	-.8"	7.6"	8.3"	0.0"	-11.1"	-18.8"
TRAJ: 200 yd. zero	-.8"	10.6"	14.4"	9.2"	0.0"	-6.6"
TRAJ: 200 m. zero	-.8"	12.3"	17.7"	14.2"	6.1"	0.0"
VELOCITY (fps)	1200	1084	1003	941	904	886
ENERGY (ft. lbs.)	505	412	353	311	287	275
TRAJ: 50 m. zero	-.8"	0.0"	-7.8"	-25.6"	-43.6"	-54.7"
TRAJ: 100 m. zero	-.8"	3.9"	0.0"	-13.8"	-29.2"	-38.9"
TRAJ: 150 m. zero	-.8"	8.6"	9.2"	0.0"	-12.3"	-20.4"
TRAJ: 200 yd. zero	-.8"	11.9"	16.0"	10.1"	0.0"	-6.9"
TRAJ: 200 m. zero	-.8"	13.7"	19.5"	15.4"	6.4"	0.0"
VELOCITY (fps)	1100	1015	950	895	862	845
ENERGY (ft. lbs.)	425	362	317	281	261	251
TRAJ: 50 m. zero	-.8"	0.0"	-9.3"	-29.8"	-49.9"	-62.8"
TRAJ: 100 m. zero	-.8"	4.7"	0.0"	-15.8"	-32.9"	-44.2"
TRAJ: 150 m. zero	-.8"	9.9"	10.6"	0.0"	-13.5"	-23.1"
TRAJ: 200 yd. zero	-.8"	13.7"	18.0"	11.2"	0.0"	-8.2"
TRAJ: 200 m. zero	-.8"	15.7"	22.1"	17.3"	7.6"	0.0"

**38 Caliber (.357" Dia.) 160 GRAIN FULL METAL JACKETED FLAT POINT**

SECTIONAL DENSITY: .179 BALLISTIC COEFFICIENT: .151

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	2000	1736	1503	1304	1197	1151
ENERGY (ft. lbs.)	1421	1071	803	604	509	471
TRAJ: 50 m. zero	-.8"	0.0"	-2.7"	-9.9"	-17.8"	-23.1"
TRAJ: 100 m. zero	-.8"	1.4"	0.0"	-5.8"	-12.9"	-17.7"
TRAJ: 150 m. zero	-.8"	3.3"	3.9"	0.0"	-5.7"	-9.8"
TRAJ: 200 yd. zero	-.8"	4.9"	7.1"	4.7"	0.0"	-3.6"
TRAJ: 200 m. zero	-.8"	5.8"	8.9"	7.4"	3.3"	0.0"
VELOCITY (fps)	1900	1647	1427	1242	1149	1110
ENERGY (ft. lbs.)	1283	964	724	548	469	438
TRAJ: 50 m. zero	-.8"	0.0"	-3.0"	-11.2"	-19.9"	-25.7"
TRAJ: 100 m. zero	-.8"	1.5"	0.0"	-6.6"	-14.3"	-19.5"
TRAJ: 150 m. zero	-.8"	3.7"	4.4"	0.0"	-6.2"	-10.7"
TRAJ: 200 yd. zero	-.8"	5.5"	7.8"	5.2"	0.0"	-3.8"
TRAJ: 200 m. zero	-.8"	6.4"	9.8"	8.0"	3.5"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1560	1351	1185	1106	1072
ENERGY (ft. lbs.)	1151	865	649	499	435	408
TRAJ: 50 m. zero	-.8"	0.0"	-3.5"	-12.6"	-22.2"	-28.6"
TRAJ: 100 m. zero	-.8"	1.8"	0.0"	-7.3"	-15.8"	-21.5"
TRAJ: 150 m. zero	-.8"	4.2"	4.9"	0.0"	-6.9"	-11.8"
TRAJ: 200 yd. zero	-.8"	6.1"	8.7"	5.7"	0.0"	-4.2"
TRAJ: 200 m. zero	-.8"	7.2"	10.8"	8.9"	3.9"	0.0"
VELOCITY (fps)	1700	1473	1279	1135	1067	1037
ENERGY (ft. lbs.)	1027	771	581	458	405	382
TRAJ: 50 m. zero	-.8"	0.0"	-4.0"	-14.2"	-25.0"	-32.0"
TRAJ: 100 m. zero	-.8"	2.0"	0.0"	-8.1"	-17.6"	-23.9"
TRAJ: 150 m. zero	-.8"	4.8"	5.5"	0.0"	-7.6"	-13.0"
TRAJ: 200 yd. zero	-.8"	6.8"	9.6"	6.3"	0.0"	-4.6"
TRAJ: 200 m. zero	-.8"	8.0"	12.0"	9.8"	4.3"	0.0"
VELOCITY (fps)	1600	1386	1210	1090	1032	1005
ENERGY (ft. lbs.)	910	683	520	422	378	359
TRAJ: 50 m. zero	-.8"	0.0"	-4.6"	-16.0"	-27.8"	-35.8"
TRAJ: 100 m. zero	-.8"	2.3"	0.0"	-9.0"	-19.3"	-26.3"
TRAJ: 150 m. zero	-.8"	5.3"	6.0"	0.0"	-8.2"	-14.2"
TRAJ: 200 yd. zero	-.8"	7.6"	10.6"	6.8"	0.0"	-5.2"
TRAJ: 200 m. zero	-.8"	8.9"	13.2"	10.7"	4.8"	0.0"
VELOCITY (fps)	1500	1301	1150	1049	998	975
ENERGY (ft. lbs.)	800	601	470	391	354	338
TRAJ: 50 m. zero	-.8"	0.0"	-5.3"	-18.0"	-31.2"	-39.5"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-10.1"	-21.5"	-28.9"
TRAJ: 150 m. zero	-.8"	6.0"	6.7"	0.0"	-9.2"	-15.4"
TRAJ: 200 yd. zero	-.8"	8.5"	11.8"	7.6"	0.0"	-5.3"
TRAJ: 200 m. zero	-.8"	9.9"	14.5"	11.6"	4.9"	0.0"
VELOCITY (fps)	1400	1221	1097	1011	967	945
ENERGY (ft. lbs.)	697	530	428	363	332	317
TRAJ: 50 m. zero	-.8"	0.0"	-6.0"	-20.3"	-34.7"	-44.3"
TRAJ: 100 m. zero	-.8"	3.0"	0.0"	-11.2"	-23.6"	-32.1"
TRAJ: 150 m. zero	-.8"	6.8"	7.5"	0.0"	-9.8"	-17.1"
TRAJ: 200 yd. zero	-.8"	9.5"	12.9"	8.1"	0.0"	-6.3"
TRAJ: 200 m. zero	-.8"	11.1"	16.1"	12.8"	5.8"	0.0"
VELOCITY (fps)	1300	1149	1048	975	935	916
ENERGY (ft. lbs.)	601	469	390	338	311	298
TRAJ: 50 m. zero	-.8"	0.0"	-6.9"	-22.9"	-39.0"	-48.8"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.4"	-26.3"	-34.9"
TRAJ: 150 m. zero	-.8"	7.6"	8.3"	0.0"	-11.1"	-18.3"
TRAJ: 200 yd. zero	-.8"	10.7"	14.4"	9.1"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	12.2"	17.5"	13.7"	5.6"	0.0"
VELOCITY (fps)	1200	1083	1001	938	902	883
ENERGY (ft. lbs.)	512	417	356	313	289	277
TRAJ: 50 m. zero	-.8"	0.0"	-7.9"	-26.0"	-43.5"	-55.1"
TRAJ: 100 m. zero	-.8"	4.0"	0.0"	-14.1"	-29.0"	-39.2"
TRAJ: 150 m. zero	-.8"	8.7"	9.4"	0.0"	-11.8"	-20.4"
TRAJ: 200 yd. zero	-.8"	11.9"	15.9"	9.7"	0.0"	-7.4"
TRAJ: 200 m. zero	-.8"	13.8"	19.6"	15.3"	6.9"	0.0"
VELOCITY (fps)	1100	1014	949	893	859	842
ENERGY (ft. lbs.)	430	365	320	283	262	252
TRAJ: 50 m. zero	-.8"	0.0"	-9.1"	-29.8"	-50.4"	-63.4"
TRAJ: 100 m. zero	-.8"	4.6"	0.0"	-16.0"	-33.6"	-45.0"
TRAJ: 150 m. zero	-.8"	10.0"	10.7"	0.0"	-14.0"	-23.6"
TRAJ: 200 yd. zero	-.8"	13.8"	18.4"	11.6"	0.0"	-8.2"
TRAJ: 200 m. zero	-.8"	15.9"	22.5"	17.7"	7.5"	0.0"

**35 Caliber (.358" Dia.) 200 GRAIN ROUND NOSE**

SECTIONAL DENSITY: .223 BALLISTIC COEFFICIENT: .180

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1596	1415	1259	1175	1139
ENERGY (ft. lbs.)	1439	1131	889	704	613	576
TRAJ: 50 m. zero	-.8"	0.0"	-3.3"	-11.7"	-20.8"	-26.6"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-6.8"	-14.7"	-19.9"
TRAJ: 150 m. zero	-.8"	3.9"	4.5"	0.0"	-6.4"	-10.8"
TRAJ: 200 yd. zero	-.8"	5.7"	8.1"	5.3"	0.0"	-3.8"
TRAJ: 200 m. zero	-.8"	6.7"	10.0"	8.2"	3.5"	0.0"
VELOCITY (fps)	1700	1507	1336	1196	1126	1095
ENERGY (ft. lbs.)	1284	1009	793	635	563	533
TRAJ: 50 m. zero	-.8"	0.0"	-3.8"	-13.3"	-23.3"	-29.8"
TRAJ: 100 m. zero	-.8"	1.9"	0.0"	-7.6"	-16.3"	-22.1"
TRAJ: 150 m. zero	-.8"	4.5"	5.1"	0.0"	-7.0"	-11.9"
TRAJ: 200 yd. zero	-.8"	6.4"	8.9"	5.8"	0.0"	-4.2"
TRAJ: 200 m. zero	-.8"	7.5"	11.1"	9.0"	3.9"	0.0"
VELOCITY (fps)	1600	1419	1262	1142	1083	1056
ENERGY (ft. lbs.)	1137	894	707	579	521	495
TRAJ: 50 m. zero	-.8"	0.0"	-4.4"	-15.1"	-26.2"	-33.4"
TRAJ: 100 m. zero	-.8"	2.2"	0.0"	-8.5"	-18.2"	-24.6"
TRAJ: 150 m. zero	-.8"	5.1"	5.7"	0.0"	-7.7"	-13.2"
TRAJ: 200 yd. zero	-.8"	7.2"	10.0"	6.4"	0.0"	-4.7"
TRAJ: 200 m. zero	-.8"	8.4"	12.3"	9.9"	4.3"	0.0"
VELOCITY (fps)	1500	1331	1192	1093	1043	1019
ENERGY (ft. lbs.)	999	787	631	531	483	461
TRAJ: 50 m. zero	-.8"	0.0"	-5.1"	-17.2"	-29.5"	-37.6"
TRAJ: 100 m. zero	-.8"	2.6"	0.0"	-9.5"	-20.2"	-27.4"
TRAJ: 150 m. zero	-.8"	5.8"	6.4"	0.0"	-8.5"	-14.6"
TRAJ: 200 yd. zero	-.8"	8.1"	11.1"	7.0"	0.0"	-5.3"
TRAJ: 200 m. zero	-.8"	9.4"	13.7"	11.0"	4.9"	0.0"
VELOCITY (fps)	1400	1247	1132	1049	1006	985
ENERGY (ft. lbs.)	871	691	569	489	450	431
TRAJ: 50 m. zero	-.8"	0.0"	-5.7"	-19.4"	-33.1"	-42.1"
TRAJ: 100 m. zero	-.8"	2.9"	0.0"	-10.7"	-22.5"	-30.5"
TRAJ: 150 m. zero	-.8"	6.5"	7.2"	0.0"	-9.3"	-16.1"
TRAJ: 200 yd. zero	-.8"	9.1"	12.3"	7.7"	0.0"	-5.8"
TRAJ: 200 m. zero	-.8"	10.5"	15.3"	12.1"	5.4"	0.0"
VELOCITY (fps)	1300	1170	1077	1008	970	952
ENERGY (ft. lbs.)	751	608	515	451	418	403
TRAJ: 50 m. zero	-.8"	0.0"	-6.7"	-22.0"	-37.5"	-47.2"
TRAJ: 100 m. zero	-.8"	3.4"	0.0"	-11.9"	-25.2"	-33.8"
TRAJ: 150 m. zero	-.8"	7.3"	7.9"	0.0"	-10.7"	-17.9"
TRAJ: 200 yd. zero	-.8"	10.3"	13.8"	8.8"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	11.8"	16.9"	13.5"	5.7"	0.0"
VELOCITY (fps)	1200	1099	1024	967	934	917
ENERGY (ft. lbs.)	640	537	466	415	388	374
TRAJ: 50 m. zero	-.8"	0.0"	-7.8"	-24.9"	-42.0"	-52.9"
TRAJ: 100 m. zero	-.8"	3.9"	0.0"	-13.2"	-27.7"	-37.3"
TRAJ: 150 m. zero	-.8"	8.3"	8.8"	0.0"	-11.6"	-19.6"
TRAJ: 200 yd. zero	-.8"	11.5"	15.2"	9.5"	0.0"	-6.9"
TRAJ: 200 m. zero	-.8"	13.2"	18.7"	14.8"	6.4"	0.0"

**35 Caliber (.358" Dia.) 200 GRAIN SPIRE POINT**

SECTIONAL DENSITY: .223 BALLISTIC COEFFICIENT: .295

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1672	1553	1443	1374	1340
ENERGY (ft. lbs.)	1439	1242	1071	925	839	798
TRAJ: 50 m. zero	-.8"	0.0"	-2.9"	-10.1"	-17.6"	-22.3"
TRAJ: 100 m. zero	-.8"	1.5"	0.0"	-5.7"	-12.1"	-16.3"
TRAJ: 150 m. zero	-.8"	3.4"	3.8"	0.0"	-5.2"	-8.7"
TRAJ: 200 yd. zero	-.8"	4.8"	6.7"	4.3"	0.0"	-3.0"
TRAJ: 200 m. zero	-.8"	5.6"	8.2"	6.6"	2.8"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1700	1580	1487	1363	1300	1289
ENERGY (ft. lbs.)	1284	1109	956	825	751	715
TRAJ: 50 m. zero	-.8"	0.0"	-3.4"	-11.6"	-19.9"	-25.3"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-6.4"	-13.7"	-18.4"
TRAJ: 150 m. zero	-.8"	3.9"	4.3"	0.0"	-5.8"	-9.8"
TRAJ: 200 yd. zero	-.8"	5.5"	7.5"	4.8"	0.0"	-3.4"
TRAJ: 200 m. zero	-.8"	6.3"	9.2"	7.4"	3.2"	0.0"
VELOCITY (fps)	1600	1487	1381	1285	1229	1202
ENERGY (ft. lbs.)	1137	982	847	733	671	642
TRAJ: 50 m. zero	-.8"	0.0"	-3.9"	-13.3"	-22.8"	-28.8"
TRAJ: 100 m. zero	-.8"	2.0"	0.0"	-7.4"	-15.5"	-20.9"
TRAJ: 150 m. zero	-.8"	4.5"	5.0"	0.0"	-6.5"	-10.9"
TRAJ: 200 yd. zero	-.8"	6.2"	8.5"	5.3"	0.0"	-3.8"
TRAJ: 200 m. zero	-.8"	7.2"	10.5"	8.2"	3.5"	0.0"
VELOCITY (fps)	1500	1394	1297	1212	1165	1142
ENERGY (ft. lbs.)	999	863	747	653	603	579
TRAJ: 50 m. zero	-.8"	0.0"	-4.5"	-15.3"	-26.0"	-33.0"
TRAJ: 100 m. zero	-.8"	2.3"	0.0"	-8.4"	-17.7"	-23.9"
TRAJ: 150 m. zero	-.8"	5.1"	5.7"	0.0"	-7.3"	-12.6"
TRAJ: 200 yd. zero	-.8"	7.1"	9.7"	6.0"	0.0"	-4.5"
TRAJ: 200 m. zero	-.8"	8.3"	12.0"	9.5"	4.2"	0.0"
VELOCITY (fps)	1400	1303	1217	1147	1109	1090
ENERGY (ft. lbs.)	871	754	658	584	546	528
TRAJ: 50 m. zero	-.8"	0.0"	-5.4"	-17.6"	-29.7"	-37.6"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-9.5"	-19.8"	-26.8"
TRAJ: 150 m. zero	-.8"	5.9"	6.4"	0.0"	-8.1"	-14.0"
TRAJ: 200 yd. zero	-.8"	8.1"	10.9"	6.7"	0.0"	-5.0"
TRAJ: 200 m. zero	-.8"	9.4"	13.4"	10.5"	4.6"	0.0"
VELOCITY (fps)	1300	1215	1146	1090	1058	1042
ENERGY (ft. lbs.)	751	656	583	528	497	482
TRAJ: 50 m. zero	-.8"	0.0"	-6.1"	-20.1"	-33.9"	-42.8"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-10.8"	-22.7"	-30.5"
TRAJ: 150 m. zero	-.8"	6.7"	7.3"	0.0"	-9.4"	-16.0"
TRAJ: 200 yd. zero	-.8"	9.3"	12.4"	7.7"	0.0"	-5.6"
TRAJ: 200 m. zero	-.8"	10.7"	15.3"	12.0"	5.2"	0.0"
VELOCITY (fps)	1200	1134	1080	1035	1009	996
ENERGY (ft. lbs.)	640	571	518	476	452	441
TRAJ: 50 m. zero	-.8"	0.0"	-7.3"	-23.3"	-38.8"	-48.5"
TRAJ: 100 m. zero	-.8"	3.7"	0.0"	-12.3"	-25.5"	-33.9"
TRAJ: 150 m. zero	-.8"	7.8"	8.3"	0.0"	-10.4"	-17.4"
TRAJ: 200 yd. zero	-.8"	10.6"	14.0"	8.5"	0.0"	-6.0"
TRAJ: 200 m. zero	-.8"	12.1"	17.0"	13.1"	5.5"	0.0"

**41 Caliber (.410" Dia.) 210 GRAIN JACKETED HOLLOW POINT**  
SECTIONAL DENSITY: .178 BALLISTIC COEFFICIENT: .141

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1600	1372	1190	1070	1012	986
ENERGY (ft. lbs.)	1194	878	660	534	478	453
TRAJ: 50 m. zero	-.8"	0.0"	-4.7"	-16.4"	-28.6"	-36.4"
TRAJ: 100 m. zero	-.8"	2.4"	0.0"	-9.3"	-19.9"	-26.9"
TRAJ: 150 m. zero	-.8"	5.5"	6.2"	0.0"	-8.5"	-14.5"
TRAJ: 200 yd. zero	-.8"	7.8"	10.9"	7.0"	0.0"	-5.1"
TRAJ: 200 m. zero	-.8"	9.1"	13.5"	10.9"	4.7"	0.0"
VELOCITY (fps)	1500	1289	1134	1032	981	958
ENERGY (ft. lbs.)	1049	775	600	497	449	428
TRAJ: 50 m. zero	-.8"	0.0"	-5.3"	-18.4"	-31.9"	-40.4"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-10.3"	-22.0"	-29.6"
TRAJ: 150 m. zero	-.8"	6.2"	6.9"	0.0"	-9.4"	-15.8"
TRAJ: 200 yd. zero	-.8"	8.7"	12.1"	7.7"	0.0"	-5.5"
TRAJ: 200 m. zero	-.8"	10.1"	14.8"	11.9"	5.0"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1210	1083	996	951	929
ENERGY (ft. lbs.)	914	683	547	483	422	403
TRAJ: 50 m. zero	-.8"	0.0"	-6.1"	-20.7"	-35.5"	-45.1"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.4"	-24.3"	-32.7"
TRAJ: 150 m. zero	-.8"	6.9"	7.7"	0.0"	-10.2"	-17.4"
TRAJ: 200 yd. zero	-.8"	9.7"	13.3"	8.4"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	11.3"	16.4"	13.1"	5.7"	0.0"
VELOCITY (fps)	1300	1141	1037	962	921	900
ENERGY (ft. lbs.)	788	607	502	432	396	378
TRAJ: 50 m. zero	-.8"	0.0"	-7.0"	-23.3"	-39.5"	-50.1"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.7"	-26.7"	-36.1"
TRAJ: 150 m. zero	-.8"	7.8"	8.5"	0.0"	-11.1"	-19.1"
TRAJ: 200 yd. zero	-.8"	10.8"	14.8"	9.1"	0.0"	-6.9"
TRAJ: 200 m. zero	-.8"	12.5"	18.1"	14.3"	6.3"	0.0"
VELOCITY (fps)	1200	1077	991	926	888	869
ENERGY (ft. lbs.)	672	541	458	400	368	352
TRAJ: 50 m. zero	-.8"	0.0"	-8.1"	-26.5"	-44.6"	-56.1"
TRAJ: 100 m. zero	-.8"	4.1"	0.0"	-14.2"	-29.7"	-39.7"
TRAJ: 150 m. zero	-.8"	8.8"	9.5"	0.0"	-12.3"	-20.7"
TRAJ: 200 yd. zero	-.8"	12.2"	16.2"	10.1"	0.0"	-7.2"
TRAJ: 200 m. zero	-.8"	14.0"	19.9"	15.6"	6.7"	0.0"
VELOCITY (fps)	1100	1009	940	882	847	830
ENERGY (ft. lbs.)	564	475	412	363	335	321
TRAJ: 50 m. zero	-.8"	0.0"	-9.5"	-30.3"	-51.1"	-63.8"
TRAJ: 100 m. zero	-.8"	4.8"	0.0"	-16.0"	-33.7"	-44.8"
TRAJ: 150 m. zero	-.8"	10.1"	10.7"	0.0"	-14.1"	-23.3"
TRAJ: 200 yd. zero	-.8"	14.0"	18.4"	11.6"	0.0"	-7.9"
TRAJ: 200 m. zero	-.8"	16.0"	22.4"	17.5"	7.3"	0.0"

**44 Caliber (.430" Dia.) 200 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .155 BALLISTIC COEFFICIENT: .125

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1900	1599	1344	1153	1069	1033
ENERGY (ft. lbs.)	1604	1136	802	591	508	474
TRAJ: 50 m. zero	-.8"	0.0"	-3.3"	-12.2"	-21.8"	-28.3"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-7.2"	-15.8"	-21.6"
TRAJ: 150 m. zero	-.8"	4.1"	4.9"	0.0"	-6.9"	-11.9"
TRAJ: 200 yd. zero	-.8"	6.0"	8.7"	5.7"	0.0"	-4.3"
TRAJ: 200 m. zero	-.8"	7.1"	10.8"	9.0"	4.0"	0.0"
VELOCITY (fps)	1800	1514	1276	1110	1037	1005
ENERGY (ft. lbs.)	1439	1018	723	547	478	449
TRAJ: 50 m. zero	-.8"	0.0"	-3.7"	-13.7"	-24.2"	-31.2"
TRAJ: 100 m. zero	-.8"	1.9"	0.0"	-8.0"	-17.3"	-23.6"
TRAJ: 150 m. zero	-.8"	4.6"	5.4"	0.0"	-7.4"	-12.8"
TRAJ: 200 yd. zero	-.8"	6.6"	9.5"	6.1"	0.0"	-4.6"
TRAJ: 200 m. zero	-.8"	7.8"	11.8"	9.7"	4.3"	0.0"
VELOCITY (fps)	1700	1430	1212	1071	1006	977
ENERGY (ft. lbs.)	1284	908	653	510	450	424
TRAJ: 50 m. zero	-.8"	0.0"	-4.3"	-15.3"	-26.9"	-34.6"
TRAJ: 100 m. zero	-.8"	2.2"	0.0"	-8.8"	-19.1"	-26.0"
TRAJ: 150 m. zero	-.8"	5.1"	5.9"	0.0"	-8.2"	-14.2"
TRAJ: 200 yd. zero	-.8"	7.4"	10.4"	6.8"	0.0"	-5.1"
TRAJ: 200 m. zero	-.8"	8.7"	13.0"	10.7"	4.7"	0.0"
VELOCITY (fps)	1600	1345	1154	1034	978	952
ENERGY (ft. lbs.)	1137	804	592	475	425	403
TRAJ: 50 m. zero	-.8"	0.0"	-4.9"	-17.2"	-29.8"	-38.1"
TRAJ: 100 m. zero	-.8"	2.5"	0.0"	-9.9"	-20.8"	-28.2"
TRAJ: 150 m. zero	-.8"	5.8"	6.6"	0.0"	-8.7"	-15.0"
TRAJ: 200 yd. zero	-.8"	8.2"	11.4"	7.2"	0.0"	-5.4"
TRAJ: 200 m. zero	-.8"	9.5"	14.1"	11.3"	5.0"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1500	1266	1104	1001	950	926
ENERGY (ft. lbs.)	999	712	541	445	401	381
TRAJ: 50 m. zero	-.8"	0.0"	-5.6"	-19.3"	-33.3"	-42.2"
TRAJ: 100 m. zero	-.8"	2.8"	0.0"	-10.8"	-23.0"	-30.9"
TRAJ: 150 m. zero	-.8"	6.4"	7.2"	0.0"	-9.8"	-16.4"
TRAJ: 200 yd. zero	-.8"	9.1"	12.6"	8.1"	0.0"	-5.7"
TRAJ: 200 m. zero	-.8"	10.6"	15.5"	12.4"	5.3"	0.0"
VELOCITY (fps)	1400	1191	1058	969	922	899
ENERGY (ft. lbs.)	871	630	497	417	378	359
TRAJ: 50 m. zero	-.8"	0.0"	-6.3"	-21.3"	-36.8"	-46.6"
TRAJ: 100 m. zero	-.8"	3.2"	0.0"	-11.8"	-25.1"	-33.8"
TRAJ: 150 m. zero	-.8"	7.1"	7.9"	0.0"	-10.7"	-18.1"
TRAJ: 200 yd. zero	-.8"	10.1"	13.7"	8.8"	0.0"	-6.3"
TRAJ: 200 m. zero	-.8"	11.7"	16.9"	13.6"	5.8"	0.0"
VELOCITY (fps)	1300	1125	1016	938	894	872
ENERGY (ft. lbs.)	751	562	459	391	355	338
TRAJ: 50 m. zero	-.8"	0.0"	-7.1"	-24.0"	-41.0"	-51.9"
TRAJ: 100 m. zero	-.8"	3.6"	0.0"	-13.2"	-27.8"	-37.6"
TRAJ: 150 m. zero	-.8"	8.0"	8.9"	0.0"	-11.6"	-19.9"
TRAJ: 200 yd. zero	-.8"	11.2"	15.2"	9.6"	0.0"	-7.1"
TRAJ: 200 m. zero	-.8"	13.0"	18.8"	14.9"	6.5"	0.0"
VELOCITY (fps)	1200	1064	973	904	863	842
ENERGY (ft. lbs.)	640	503	421	363	331	315
TRAJ: 50 m. zero	-.8"	0.0"	-8.3"	-26.9"	-45.7"	-58.1"
TRAJ: 100 m. zero	-.8"	4.2"	0.0"	-14.4"	-30.5"	-41.4"
TRAJ: 150 m. zero	-.8"	9.0"	9.6"	0.0"	-12.9"	-22.2"
TRAJ: 200 yd. zero	-.8"	12.5"	16.7"	10.6"	0.0"	-8.0"
TRAJ: 200 m. zero	-.8"	14.5"	20.7"	16.7"	7.4"	0.0"

#### 44 Caliber (.430" Dia.) 240 GRAIN JACKETED HOLLOW POINT

SECTIONAL DENSITY: .185 BALLISTIC COEFFICIENT: .141

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1544	1324	1157	1080	1047
ENERGY (ft. lbs.)	1727	1271	934	714	622	584
TRAJ: 50 m. zero	-.8"	0.0"	-3.6"	-13.0"	-23.0"	-29.5"
TRAJ: 100 m. zero	-.8"	1.8"	0.0"	-7.5"	-16.4"	-22.2"
TRAJ: 150 m. zero	-.8"	4.3"	5.1"	0.0"	-7.1"	-12.1"
TRAJ: 200 yd. zero	-.8"	6.3"	9.0"	5.9"	0.0"	-4.3"
TRAJ: 200 m. zero	-.8"	7.4"	11.1"	9.1"	4.0"	0.0"
VELOCITY (fps)	1700	1458	1255	1112	1045	1016
ENERGY (ft. lbs.)	1541	1133	840	659	582	550
TRAJ: 50 m. zero	-.8"	0.0"	-4.1"	-14.6"	-25.6"	-32.7"
TRAJ: 100 m. zero	-.8"	2.1"	0.0"	-8.3"	-18.0"	-24.4"
TRAJ: 150 m. zero	-.8"	4.9"	5.6"	0.0"	-7.8"	-13.2"
TRAJ: 200 yd. zero	-.8"	7.0"	9.9"	6.4"	0.0"	-4.6"
TRAJ: 200 m. zero	-.8"	8.2"	12.2"	9.9"	4.3"	0.0"
VELOCITY (fps)	1600	1372	1190	1070	1012	986
ENERGY (ft. lbs.)	1365	1003	755	610	546	518
TRAJ: 50 m. zero	-.8"	0.0"	-4.7"	-16.4"	-28.6"	-36.4"
TRAJ: 100 m. zero	-.8"	2.4"	0.0"	-9.3"	-19.9"	-26.9"
TRAJ: 150 m. zero	-.8"	5.5"	6.2"	0.0"	-8.5"	-14.5"
TRAJ: 200 yd. zero	-.8"	7.8"	10.9"	7.0"	0.0"	-5.1"
TRAJ: 200 m. zero	-.8"	9.1"	13.5"	10.9"	4.7"	0.0"
VELOCITY (fps)	1500	1289	1134	1032	961	958
ENERGY (ft. lbs.)	1199	886	685	568	513	489
TRAJ: 50 m. zero	-.8"	0.0"	-5.3"	-18.4"	-31.9"	-40.4"
TRAJ: 100 m. zero	-.8"	2.7"	0.0"	-10.3"	-22.0"	-29.6"
TRAJ: 150 m. zero	-.8"	6.2"	6.9"	0.0"	-9.4"	-15.8"
TRAJ: 200 yd. zero	-.8"	8.7"	12.1"	7.7"	0.0"	-5.5"
TRAJ: 200 m. zero	-.8"	10.1"	14.8"	11.9"	5.0"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1210	1083	996	951	929
ENERGY (ft. lbs.)	1045	780	625	529	482	460
TRAJ: 50 m. zero	-.8"	0.0"	-6.1"	-20.7"	-35.5"	-45.1"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.4"	-24.3"	-32.7"
TRAJ: 150 m. zero	-.8"	6.9"	7.7"	0.0"	-10.2"	-17.4"
TRAJ: 200 yd. zero	-.8"	9.7"	13.3"	8.4"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	11.3"	16.4"	13.1"	5.7"	0.0"
VELOCITY (fps)	1300	1141	1037	962	921	900
ENERGY (ft. lbs.)	901	694	573	493	452	432
TRAJ: 50 m. zero	-.8"	0.0"	-7.0"	-23.3"	-39.5"	-50.1"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.7"	-26.7"	-36.1"
TRAJ: 150 m. zero	-.8"	7.8"	8.5"	0.0"	-11.1"	-19.1"
TRAJ: 200 yd. zero	-.8"	10.8"	14.6"	9.1"	0.0"	-6.9"
TRAJ: 200 m. zero	-.8"	12.5"	18.1"	14.3"	6.3"	0.0"
VELOCITY (fps)	1200	1077	991	926	888	869
ENERGY (ft. lbs.)	768	618	523	457	420	403
TRAJ: 50 m. zero	-.8"	0.0"	-8.1"	-26.5"	-44.6"	-56.1"
TRAJ: 100 m. zero	-.8"	4.1"	0.0"	-14.2"	-29.7"	-39.7"
TRAJ: 150 m. zero	-.8"	8.8"	9.5"	0.0"	-12.3"	-20.7"
TRAJ: 200 yd. zero	-.8"	12.2"	16.2"	10.1"	0.0"	-7.2"
TRAJ: 200 m. zero	-.8"	14.0"	19.9"	15.6"	6.7"	0.0"
VELOCITY (fps)	1100	1009	940	882	847	830
ENERGY (ft. lbs.)	645	543	471	415	382	367
TRAJ: 50 m. zero	-.8"	0.0"	-9.5"	-30.3"	-51.1"	-63.8"
TRAJ: 100 m. zero	-.8"	4.8"	0.0"	-16.0"	-33.7"	-44.8"
TRAJ: 150 m. zero	-.8"	10.1"	10.7"	0.0"	-14.1"	-23.3"
TRAJ: 200 yd. zero	-.8"	14.0"	18.4"	11.6"	0.0"	-7.9"
TRAJ: 200 m. zero	-.8"	16.0"	22.4"	17.5"	7.3"	0.0"

**44 Caliber (.430" Dia.) 240 GRAIN FULL METAL JACKETED FLAT POINT**

SECTIONAL DENSITY: .185 BALLISTIC COEFFICIENT: .158

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1800	1570	1368	1203	1123	1088
ENERGY (ft. lbs.)	1727	1314	998	771	672	631
TRAJ: 50 m. zero	-.8"	0.0"	-3.4"	-12.3"	-21.8"	-28.1"
TRAJ: 100 m. zero	-.8"	1.7"	0.0"	-7.2"	-15.5"	-21.2"
TRAJ: 150 m. zero	-.8"	4.1"	4.8"	0.0"	-6.7"	-11.6"
TRAJ: 200 yd. zero	-.8"	6.0"	8.5"	5.5"	0.0"	-4.2"
TRAJ: 200 m. zero	-.8"	7.0"	10.6"	8.7"	3.9"	0.0"
VELOCITY (fps)	1700	1482	1294	1151	1082	1052
ENERGY (ft. lbs.)	1541	1171	893	706	624	590
TRAJ: 50 m. zero	-.8"	0.0"	-3.9"	-13.9"	-24.5"	-31.3"
TRAJ: 100 m. zero	-.8"	2.0"	0.0"	-7.9"	-17.2"	-23.3"
TRAJ: 150 m. zero	-.8"	4.7"	5.3"	0.0"	-7.5"	-12.7"
TRAJ: 200 yd. zero	-.8"	6.7"	9.4"	6.2"	0.0"	-4.5"
TRAJ: 200 m. zero	-.8"	7.8"	11.7"	9.6"	4.1"	0.0"
VELOCITY (fps)	1600	1395	1224	1103	1045	1018
ENERGY (ft. lbs.)	1365	1037	799	649	582	552
TRAJ: 50 m. zero	-.8"	0.0"	-4.5"	-15.8"	-27.3"	-35.0"
TRAJ: 100 m. zero	-.8"	2.3"	0.0"	-9.0"	-19.0"	-25.9"
TRAJ: 150 m. zero	-.8"	5.3"	6.0"	0.0"	-8.0"	-13.9"
TRAJ: 200 yd. zero	-.8"	7.5"	10.4"	6.6"	0.0"	-5.0"
TRAJ: 200 m. zero	-.8"	8.8"	13.0"	10.4"	4.6"	0.0"
VELOCITY (fps)	1500	1309	1161	1060	1010	986
ENERGY (ft. lbs.)	1199	913	719	599	544	518
TRAJ: 50 m. zero	-.8"	0.0"	-5.2"	-17.9"	-30.6"	-39.1"
TRAJ: 100 m. zero	-.8"	2.6"	0.0"	-10.0"	-21.0"	-28.6"
TRAJ: 150 m. zero	-.8"	6.0"	6.7"	0.0"	-8.8"	-15.2"
TRAJ: 200 yd. zero	-.8"	8.4"	11.5"	7.3"	0.0"	-5.6"
TRAJ: 200 m. zero	-.8"	9.8"	14.3"	11.5"	5.1"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1228	1106	1021	977	956
ENERGY (ft. lbs.)	1045	804	652	556	509	487
TRAJ: 50 m. zero	-.8"	0.0"	-6.0"	-20.1"	-34.3"	-43.5"
TRAJ: 100 m. zero	-.8"	3.0"	0.0"	-11.1"	-23.3"	-31.5"
TRAJ: 150 m. zero	-.8"	6.7"	7.4"	0.0"	-9.8"	-16.7"
TRAJ: 200 yd. zero	-.8"	9.4"	12.8"	8.1"	0.0"	-5.9"
TRAJ: 200 m. zero	-.8"	10.9"	15.8"	12.6"	5.5"	0.0"
VELOCITY (fps)	1300	1155	1056	984	945	925
ENERGY (ft. lbs.)	901	711	584	516	476	456
TRAJ: 50 m. zero	-.8"	0.0"	-6.8"	-22.6"	-38.4"	-48.8"
TRAJ: 100 m. zero	-.8"	3.4"	0.0"	-12.2"	-25.8"	-35.0"
TRAJ: 150 m. zero	-.8"	7.5"	8.2"	0.0"	-10.8"	-18.6"
TRAJ: 200 yd. zero	-.8"	10.5"	14.1"	8.9"	0.0"	-6.7"
TRAJ: 200 m. zero	-.8"	12.2"	17.5"	14.0"	6.2"	0.0"
VELOCITY (fps)	1200	1087	1007	946	910	892
ENERGY (ft. lbs.)	768	630	541	477	441	424
TRAJ: 50 m. zero	-.8"	0.0"	-7.8"	-25.6"	-43.3"	-54.5"
TRAJ: 100 m. zero	-.8"	3.9"	0.0"	-13.7"	-28.9"	-38.7"
TRAJ: 150 m. zero	-.8"	8.5"	9.2"	0.0"	-12.1"	-20.3"
TRAJ: 200 yd. zero	-.8"	11.9"	15.8"	9.9"	0.0"	-7.1"
TRAJ: 200 m. zero	-.8"	13.6"	19.4"	15.3"	6.5"	0.0"
VELOCITY (fps)	1100	1017	954	900	867	851
ENERGY (ft. lbs.)	645	551	485	432	401	386
TRAJ: 50 m. zero	-.8"	0.0"	-9.1"	-29.5"	-49.8"	-62.2"
TRAJ: 100 m. zero	-.8"	4.6"	0.0"	-15.8"	-33.1"	-43.9"
TRAJ: 150 m. zero	-.8"	9.8"	10.6"	0.0"	-13.8"	-22.8"
TRAJ: 200 yd. zero	-.8"	13.6"	18.1"	11.4"	0.0"	-7.7"
TRAJ: 200 m. zero	-.8"	15.6"	22.0"	17.2"	7.1"	0.0"

#### 44 Caliber (.430" Dia.) 265 GRAIN JACKETED FLAT POINT

SECTIONAL DENSITY: .205 BALLISTIC COEFFICIENT: .191

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1600	1428	1278	1159	1100	1073
ENERGY (ft. lbs.)	1507	1200	961	791	712	678
TRAJ: 50 m. zero	-.8"	0.0"	-4.3"	-14.9"	-25.8"	-32.8"
TRAJ: 100 m. zero	-.8"	2.2"	0.0"	-8.4"	-17.8"	-24.1"
TRAJ: 150 m. zero	-.8"	5.0"	5.6"	0.0"	-7.5"	-12.9"
TRAJ: 200 yd. zero	-.8"	7.1"	9.8"	6.2"	0.0"	-4.6"
TRAJ: 200 m. zero	-.8"	8.2"	12.1"	9.7"	4.2"	0.0"
VELOCITY (fps)	1500	1339	1206	1108	1058	1034
ENERGY (ft. lbs.)	1324	1055	856	723	659	629
TRAJ: 50 m. zero	-.8"	0.0"	-4.9"	-16.8"	-28.9"	-36.9"
TRAJ: 100 m. zero	-.8"	2.5"	0.0"	-9.4"	-19.8"	-26.9"
TRAJ: 150 m. zero	-.8"	5.6"	6.3"	0.0"	-8.3"	-14.4"
TRAJ: 200 yd. zero	-.8"	7.9"	10.9"	6.9"	0.0"	-5.2"
TRAJ: 200 m. zero	-.8"	9.2"	13.5"	10.8"	4.8"	0.0"
VELOCITY (fps)	1400	1255	1143	1061	1019	998
ENERGY (ft. lbs.)	1154	927	769	663	611	586
TRAJ: 50 m. zero	-.8"	0.0"	-5.7"	-19.3"	-32.6"	-41.5"
TRAJ: 100 m. zero	-.8"	2.9"	0.0"	-10.7"	-22.1"	-30.0"
TRAJ: 150 m. zero	-.8"	6.4"	7.1"	0.0"	-9.0"	-15.7"
TRAJ: 200 yd. zero	-.8"	8.9"	12.1"	7.4"	0.0"	-5.8"
TRAJ: 200 m. zero	-.8"	10.4"	15.0"	11.8"	5.3"	0.0"
VELOCITY (fps)	1300	1176	1086	1018	982	964
ENERGY (ft. lbs.)	995	814	694	610	568	547
TRAJ: 50 m. zero	-.8"	0.0"	-6.6"	-21.8"	-36.6"	-46.3"
TRAJ: 100 m. zero	-.8"	3.3"	0.0"	-11.8"	-24.5"	-33.0"
TRAJ: 150 m. zero	-.8"	7.3"	7.9"	0.0"	-10.0"	-17.2"
TRAJ: 200 yd. zero	-.8"	10.0"	13.4"	8.2"	0.0"	-6.2"
TRAJ: 200 m. zero	-.8"	11.6"	16.5"	12.9"	5.7"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1200	1104	1032	976	944	928
ENERGY (ft. lbs.)	848	717	627	561	525	507
TRAJ: 50 m. zero	-.8"	0.0"	-7.6"	-24.7"	-41.7"	-52.3"
TRAJ: 100 m. zero	-.8"	3.8"	0.0"	-13.2"	-27.7"	-36.9"
TRAJ: 150 m. zero	-.8"	8.3"	8.9"	0.0"	-11.5"	-19.2"
TRAJ: 200 yd. zero	-.8"	11.4"	15.2"	9.5"	0.0"	-6.8"
TRAJ: 200 m. zero	-.8"	13.1"	18.5"	14.4"	6.1"	0.0"
VELOCITY (fps)	1100	1029	974	927	898	883
ENERGY (ft. lbs.)	712	623	558	506	475	459
TRAJ: 50 m. zero	-.8"	0.0"	-8.8"	-28.4"	-47.8"	-60.1"
TRAJ: 100 m. zero	-.8"	4.4"	0.0"	-15.2"	-31.6"	-42.4"
TRAJ: 150 m. zero	-.8"	9.5"	10.2"	0.0"	-13.1"	-22.1"
TRAJ: 200 yd. zero	-.8"	13.1"	17.3"	10.8"	0.0"	-7.8"
TRAJ: 200 m. zero	-.8"	15.0"	21.2"	16.6"	7.2"	0.0"
VELOCITY (fps)	1000	950	905	864	839	826
ENERGY (ft. lbs.)	589	531	482	439	414	402
TRAJ: 50 m. zero	-.8"	0.0"	-10.7"	-34.1"	-56.7"	-70.9"
TRAJ: 100 m. zero	-.8"	5.4"	0.0"	-18.0"	-37.0"	-49.3"
TRAJ: 150 m. zero	-.8"	11.4"	12.0"	0.0"	-15.0"	-25.3"
TRAJ: 200 yd. zero	-.8"	15.5"	20.2"	12.3"	0.0"	-8.9"
TRAJ: 200 m. zero	-.8"	17.7"	24.7"	19.0"	8.1"	0.0"

**45 Caliber (.451" Dia.) 185 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .130 BALLISTIC COEFFICIENT: .106

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1600	1306	1105	988	931	903
ENERGY (ft. lbs.)	1052	701	502	401	356	335
TRAJ: 50 m. zero	-.8"	0.0"	-5.2"	-18.3"	-31.9"	-40.9"
TRAJ: 100 m. zero	-.8"	2.6"	0.0"	-10.3"	-22.2"	-30.3"
TRAJ: 150 m. zero	-.8"	6.1"	6.9"	0.0"	-9.6"	-16.5"
TRAJ: 200 yd. zero	-.8"	8.7"	12.2"	7.9"	0.0"	-6.0"
TRAJ: 200 m. zero	-.8"	10.2"	15.2"	12.4"	5.5"	0.0"
VELOCITY (fps)	1500	1231	1062	959	905	879
ENERGY (ft. lbs.)	925	623	463	378	337	317
TRAJ: 50 m. zero	-.8"	0.0"	-5.9"	-20.2"	-35.3"	-44.9"
TRAJ: 100 m. zero	-.8"	3.0"	0.0"	-11.3"	-24.3"	-32.9"
TRAJ: 150 m. zero	-.8"	6.8"	7.5"	0.0"	-10.5"	-17.8"
TRAJ: 200 yd. zero	-.8"	9.7"	13.3"	8.7"	0.0"	-6.3"
TRAJ: 200 m. zero	-.8"	11.2"	16.5"	13.4"	5.8"	0.0"
VELOCITY (fps)	1400	1162	1023	931	881	856
ENERGY (ft. lbs.)	805	555	430	356	319	301
TRAJ: 50 m. zero	-.8"	0.0"	-6.6"	-22.6"	-38.7"	-49.3"
TRAJ: 100 m. zero	-.8"	3.3"	0.0"	-12.6"	-26.5"	-36.0"
TRAJ: 150 m. zero	-.8"	7.5"	8.4"	0.0"	-11.1"	-19.1"
TRAJ: 200 yd. zero	-.8"	10.6"	14.5"	9.2"	0.0"	-6.9"
TRAJ: 200 m. zero	-.8"	12.3"	18.0"	14.4"	6.4"	0.0"
VELOCITY (fps)	1300	1102	986	903	855	832
ENERGY (ft. lbs.)	694	499	399	335	300	284
TRAJ: 50 m. zero	-.8"	0.0"	-7.4"	-24.9"	-42.8"	-54.2"
TRAJ: 100 m. zero	-.8"	3.7"	0.0"	-13.7"	-29.2"	-39.3"
TRAJ: 150 m. zero	-.8"	8.3"	9.2"	0.0"	-12.4"	-20.9"
TRAJ: 200 yd. zero	-.8"	11.7"	16.0"	10.3"	0.0"	-7.3"
TRAJ: 200 m. zero	-.8"	13.6"	19.7"	15.7"	6.7"	0.0"
VELOCITY (fps)	1200	1045	947	870	826	804
ENERGY (ft. lbs.)	592	449	368	311	280	266
TRAJ: 50 m. zero	-.8"	0.0"	-8.5"	-28.1"	-47.8"	-60.6"
TRAJ: 100 m. zero	-.8"	4.3"	0.0"	-15.3"	-32.2"	-43.5"
TRAJ: 150 m. zero	-.8"	9.4"	10.3"	0.0"	-13.5"	-23.0"
TRAJ: 200 yd. zero	-.8"	13.1"	17.6"	11.1"	0.0"	-8.3"
TRAJ: 200 m. zero	-.8"	15.2"	21.8"	17.3"	7.6"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1100	984	902	832	791	770
ENERGY (ft. lbs.)	497	398	334	284	257	244
TRAJ: 50 m. zero	-.8"	0.0"	-9.6"	-31.7"	-54.1"	-68.8"
TRAJ: 100 m. zero	-.8"	4.8"	0.0"	-17.2"	-36.5"	-49.6"
TRAJ: 150 m. zero	-.8"	10.8"	11.5"	0.0"	-15.4"	-26.5"
TRAJ: 200 yd. zero	-.8"	14.8"	20.0"	12.7"	0.0"	-9.6"
TRAJ: 200 m. zero	-.8"	17.2"	24.8"	19.9"	8.8"	0.0"

### 45 Caliber (.451" Dia.) 230 GRAIN FULL METAL JACKETED ROUND NOSE

SECTIONAL DENSITY: .182 BALLISTIC COEFFICIENT: .138

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1207	1078	991	948	924
ENERGY (ft. lbs.)	1001	744	594	502	457	436
TRAJ: 50 m. zero	-.8"	0.0"	-6.2"	-20.9"	-35.7"	-45.2"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.5"	-24.3"	-32.7"
TRAJ: 150 m. zero	-.8"	7.0"	7.7"	0.0"	-10.2"	-17.4"
TRAJ: 200 yd. zero	-.8"	9.8"	13.3"	8.4"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	11.3"	16.4"	13.1"	5.6"	0.0"
VELOCITY (fps)	1300	1138	1033	958	916	895
ENERGY (ft. lbs.)	863	662	545	469	429	409
TRAJ: 50 m. zero	-.8"	0.0"	-7.0"	-23.3"	-39.9"	-50.5"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.7"	-26.9"	-36.3"
TRAJ: 150 m. zero	-.8"	7.8"	8.5"	0.0"	-11.4"	-19.3"
TRAJ: 200 yd. zero	-.8"	10.9"	14.8"	9.4"	0.0"	-6.8"
TRAJ: 200 m. zero	-.8"	12.6"	18.2"	14.5"	6.3"	0.0"
VELOCITY (fps)	1200	1074	988	923	884	864
ENERGY (ft. lbs.)	736	589	499	435	399	381
TRAJ: 50 m. zero	-.8"	0.0"	-8.0"	-26.2"	-44.5"	-56.4"
TRAJ: 100 m. zero	-.8"	4.0"	0.0"	-14.0"	-29.7"	-40.3"
TRAJ: 150 m. zero	-.8"	8.7"	9.4"	0.0"	-12.5"	-21.5"
TRAJ: 200 yd. zero	-.8"	12.2"	16.3"	10.3"	0.0"	-7.7"
TRAJ: 200 m. zero	-.8"	14.1"	20.2"	16.2"	7.1"	0.0"
VELOCITY (fps)	1100	1007	938	879	843	825
ENERGY (ft. lbs.)	618	518	449	395	363	348
TRAJ: 50 m. zero	-.8"	0.0"	-9.3"	-30.1"	-51.2"	-64.6"
TRAJ: 100 m. zero	-.8"	4.7"	0.0"	-16.1"	-34.2"	-45.9"
TRAJ: 150 m. zero	-.8"	10.1"	10.8"	0.0"	-14.4"	-24.4"
TRAJ: 200 yd. zero	-.8"	14.0"	18.7"	11.9"	0.0"	-8.5"
TRAJ: 200 m. zero	-.8"	16.2"	23.0"	18.3"	7.8"	0.0"
VELOCITY (fps)	1000	933	874	822	791	775
ENERGY (ft. lbs.)	511	445	390	345	320	307
TRAJ: 50 m. zero	-.8"	0.0"	-11.2"	-36.0"	-60.3"	-75.8"
TRAJ: 100 m. zero	-.8"	5.6"	0.0"	-19.1"	-39.7"	-53.3"
TRAJ: 150 m. zero	-.8"	12.0"	12.8"	0.0"	-16.3"	-27.7"
TRAJ: 200 yd. zero	-.8"	16.5"	21.7"	13.4"	0.0"	-9.8"
TRAJ: 200 m. zero	-.8"	19.0"	26.7"	20.8"	9.0"	0.0"
VELOCITY (fps)	900	846	797	753	725	710
ENERGY (ft. lbs.)	414	366	324	290	269	258
TRAJ: 50 m. zero	-.8"	0.0"	-13.8"	-43.8"	-73.2"	-92.3"
TRAJ: 100 m. zero	-.8"	6.9"	0.0"	-23.0"	-47.9"	-64.5"
TRAJ: 150 m. zero	-.8"	14.6"	15.3"	0.0"	-19.8"	-33.9"
TRAJ: 200 yd. zero	-.8"	20.0"	26.2"	16.3"	0.0"	-12.1"
TRAJ: 200 m. zero	-.8"	23.1"	32.3"	25.4"	11.2"	0.0"
VELOCITY (fps)	800	756	714	675	649	636
ENERGY (ft. lbs.)	327	292	260	233	215	207
TRAJ: 50 m. zero	-.8"	0.0"	-17.4"	-54.6"	-92.6"	-115.7"
TRAJ: 100 m. zero	-.8"	8.7"	0.0"	-28.3"	-60.6"	-80.7"
TRAJ: 150 m. zero	-.8"	18.2"	18.9"	0.0"	-26.0"	-42.9"
TRAJ: 200 yd. zero	-.8"	25.3"	33.2"	21.3"	0.0"	-14.4"
TRAJ: 200 m. zero	-.8"	28.9"	40.4"	32.2"	13.2"	0.0"

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	700	662	625	590	568	556
ENERGY (ft. lbs.)	250	224	200	178	165	158
TRAJ: 50 m. zero	-.8"	0.0"	-23.1"	-73.0"	-121.3"	-152.7"
TRAJ: 100 m. zero	-.8"	11.6"	0.0"	-38.3"	-79.0"	-106.4"
TRAJ: 150 m. zero	-.8"	24.3"	25.6"	0.0"	-32.2"	-55.3"
TRAJ: 200 yd. zero	-.8"	33.2"	43.2"	26.5"	0.0"	-20.0"
TRAJ: 200 m. zero	-.8"	38.2"	53.2"	41.5"	18.4"	0.0"

**45 Caliber (.451" Dia.) 230 GRAIN FULL METAL JACKETED FLAT POINT**

SECTIONAL DENSITY: .162 BALLISTIC COEFFICIENT: .148

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1218	1093	1007	962	941
ENERGY (ft. lbs.)	1001	758	610	518	473	452
TRAJ: 50 m. zero	-.8"	0.0"	-6.1"	-20.4"	-35.1"	-44.3"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.2"	-23.9"	-32.1"
TRAJ: 150 m. zero	-.8"	6.8"	7.5"	0.0"	-10.2"	-17.0"
TRAJ: 200 yd. zero	-.8"	9.6"	13.1"	8.4"	0.0"	-5.8"
TRAJ: 200 m. zero	-.8"	11.1"	16.1"	12.8"	5.4"	0.0"
VELOCITY (fps)	1300	1147	1045	971	931	911
ENERGY (ft. lbs.)	863	672	558	482	443	424
TRAJ: 50 m. zero	-.8"	0.0"	-6.9"	-23.1"	-39.2"	-49.5"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.6"	-26.4"	-35.5"
TRAJ: 150 m. zero	-.8"	7.7"	8.4"	0.0"	-11.0"	-18.6"
TRAJ: 200 yd. zero	-.8"	10.7"	14.5"	9.1"	0.0"	-6.5"
TRAJ: 200 m. zero	-.8"	12.4"	17.8"	14.0"	6.0"	0.0"
VELOCITY (fps)	1200	1081	998	935	898	879
ENERGY (ft. lbs.)	736	597	509	447	412	395
TRAJ: 50 m. zero	-.8"	0.0"	-7.9"	-25.9"	-43.7"	-55.3"
TRAJ: 100 m. zero	-.8"	4.0"	0.0"	-13.9"	-29.1"	-39.3"
TRAJ: 150 m. zero	-.8"	8.7"	9.3"	0.0"	-12.1"	-20.6"
TRAJ: 200 yd. zero	-.8"	12.0"	16.0"	9.9"	0.0"	-7.4"
TRAJ: 200 m. zero	-.8"	13.8"	19.7"	15.5"	6.8"	0.0"
VELOCITY (fps)	1100	1012	946	890	856	839
ENERGY (ft. lbs.)	618	523	457	405	374	360
TRAJ: 50 m. zero	-.8"	0.0"	-9.2"	-29.7"	-50.2"	-63.0"
TRAJ: 100 m. zero	-.8"	4.6"	0.0"	-15.8"	-33.2"	-44.4"
TRAJ: 150 m. zero	-.8"	9.9"	10.6"	0.0"	-13.9"	-23.3"
TRAJ: 200 yd. zero	-.8"	13.7"	18.2"	11.4"	0.0"	-8.1"
TRAJ: 200 m. zero	-.8"	15.8"	22.2"	17.5"	7.4"	0.0"
VELOCITY (fps)	1000	937	881	832	802	787
ENERGY (ft. lbs.)	511	449	396	354	329	316
TRAJ: 50 m. zero	-.8"	0.0"	-11.2"	-35.4"	-59.5"	-74.5"
TRAJ: 100 m. zero	-.8"	5.6"	0.0"	-18.6"	-39.0"	-52.0"
TRAJ: 150 m. zero	-.8"	11.8"	12.4"	0.0"	-16.2"	-27.1"
TRAJ: 200 yd. zero	-.8"	16.3"	21.3"	13.3"	0.0"	-9.3"
TRAJ: 200 m. zero	-.8"	18.6"	26.0"	20.4"	8.6"	0.0"
VELOCITY (fps)	900	849	803	762	735	721
ENERGY (ft. lbs.)	414	368	329	297	276	266
TRAJ: 50 m. zero	-.8"	0.0"	-13.6"	-42.7"	-72.1"	-90.5"
TRAJ: 100 m. zero	-.8"	6.8"	0.0"	-22.2"	-47.1"	-63.2"
TRAJ: 150 m. zero	-.8"	14.3"	14.8"	0.0"	-20.0"	-33.5"
TRAJ: 200 yd. zero	-.8"	19.7"	25.8"	16.4"	0.0"	-11.6"
TRAJ: 200 m. zero	-.8"	22.6"	31.6"	25.2"	10.7"	0.0"
VELOCITY (fps)	800	759	720	682	659	646
ENERGY (ft. lbs.)	327	294	265	238	222	213
TRAJ: 50 m. zero	-.8"	0.0"	-17.0"	-54.8"	-90.2"	-113.8"
TRAJ: 100 m. zero	-.8"	8.5"	0.0"	-29.3"	-59.0"	-79.7"
TRAJ: 150 m. zero	-.8"	18.3"	19.6"	0.0"	-23.2"	-40.6"
TRAJ: 200 yd. zero	-.8"	24.7"	32.3"	19.1"	0.0"	-15.1"
TRAJ: 200 m. zero	-.8"	28.5"	39.9"	30.5"	13.9"	0.0"



RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	700	664	630	597	576	565
ENERGY (ft. lbs.)	250	225	203	182	169	163
TRAJ: 50 m. zero	-.8"	0.0"	-22.2"	-71.1"	-118.8"	-148.8"
TRAJ: 100 m. zero	-.8"	11.1"	0.0"	-37.7"	-78.1"	-104.1"
TRAJ: 150 m. zero	-.8"	23.7"	25.2"	0.0"	-32.0"	-53.7"
TRAJ: 200 yd. zero	-.8"	32.5"	42.7"	26.3"	0.0"	-18.6"
TRAJ: 200 m. zero	-.8"	37.2"	52.1"	40.3"	17.1"	0.0"

**45 Caliber (.452" Dia.) 250 GRAIN JACKETED HOLLOW POINT**

SECTIONAL DENSITY: .175 BALLISTIC COEFFICIENT: .138

RANGE	MUZZLE	50 m.	100 m.	150 m.	200 yd.	200 m.
VELOCITY (fps)	1400	1207	1078	991	946	924
ENERGY (ft. lbs.)	1088	809	645	545	497	474
TRAJ: 50 m. zero	-.8"	0.0"	-6.2"	-20.9"	-35.7"	-45.2"
TRAJ: 100 m. zero	-.8"	3.1"	0.0"	-11.5"	-24.3"	-32.7"
TRAJ: 150 m. zero	-.8"	7.0"	7.7"	0.0"	-10.2"	-17.4"
TRAJ: 200 yd. zero	-.8"	9.8"	13.3"	8.4"	0.0"	-6.1"
TRAJ: 200 m. zero	-.8"	11.3"	16.4"	13.1"	5.6"	0.0"
VELOCITY (fps)	1300	1138	1033	958	916	895
ENERGY (ft. lbs.)	938	719	593	510	466	445
TRAJ: 50 m. zero	-.8"	0.0"	-7.0"	-23.3"	-39.9"	-50.5"
TRAJ: 100 m. zero	-.8"	3.5"	0.0"	-12.7"	-26.9"	-36.3"
TRAJ: 150 m. zero	-.8"	7.8"	8.5"	0.0"	-11.4"	-19.3"
TRAJ: 200 yd. zero	-.8"	10.9"	14.8"	9.4"	0.0"	-6.8"
TRAJ: 200 m. zero	-.8"	12.6"	18.2"	14.5"	6.3"	0.0"
VELOCITY (fps)	1200	1074	968	923	884	864
ENERGY (ft. lbs.)	800	640	542	473	434	414
TRAJ: 50 m. zero	-.8"	0.0"	-8.0"	-26.2"	-44.5"	-56.4"
TRAJ: 100 m. zero	-.8"	4.0"	0.0"	-14.0"	-29.7"	-40.3"
TRAJ: 150 m. zero	-.8"	8.7"	9.4"	0.0"	-12.5"	-21.5"
TRAJ: 200 yd. zero	-.8"	12.2"	16.3"	10.3"	0.0"	-7.7"
TRAJ: 200 m. zero	-.8"	14.1"	20.2"	16.2"	7.1"	0.0"
VELOCITY (fps)	1100	1007	938	879	843	825
ENERGY (ft. lbs.)	672	563	489	429	395	378
TRAJ: 50 m. zero	-.8"	0.0"	-9.3"	-30.1"	-51.2"	-64.6"
TRAJ: 100 m. zero	-.8"	4.7"	0.0"	-16.1"	-34.2"	-45.9"
TRAJ: 150 m. zero	-.8"	10.1"	10.8"	0.0"	-14.4"	-24.4"
TRAJ: 200 yd. zero	-.8"	14.0"	18.7"	11.9"	0.0"	-8.5"
TRAJ: 200 m. zero	-.8"	16.2"	23.0"	18.3"	7.8"	0.0"
VELOCITY (fps)	1000	933	874	822	791	775
ENERGY (ft. lbs.)	555	483	424	375	347	334
TRAJ: 50 m. zero	-.8"	0.0"	-11.2"	-36.0"	-60.3"	-75.8"
TRAJ: 100 m. zero	-.8"	5.8"	0.0"	-19.1"	-39.7"	-53.3"
TRAJ: 150 m. zero	-.8"	12.0"	12.8"	0.0"	-16.3"	-27.7"
TRAJ: 200 yd. zero	-.8"	16.5"	21.7"	13.4"	0.0"	-9.8"
TRAJ: 200 m. zero	-.8"	19.0"	26.7"	20.8"	9.0"	0.0"
VELOCITY (fps)	900	846	797	753	725	710
ENERGY (ft. lbs.)	450	397	353	315	292	280
TRAJ: 50 m. zero	-.8"	0.0"	-13.8"	-43.8"	-73.2"	-92.3"
TRAJ: 100 m. zero	-.8"	6.9"	0.0"	-23.0"	-47.9"	-64.5"
TRAJ: 150 m. zero	-.8"	14.8"	15.3"	0.0"	-19.8"	-33.9"
TRAJ: 200 yd. zero	-.8"	20.0"	26.2"	16.3"	0.0"	-12.1"
TRAJ: 200 m. zero	-.8"	23.1"	32.3"	25.4"	11.2"	0.0"



## WIND DRIFT TABLES

## INTRODUCTION

The shooter who has fired at ranges greater than 100 yards when the wind was blowing, has been disappointed many times because his shot did not strike exactly where intended. The reason being, the wind "carried" the bullet away from its intended path. After a great deal of shooting in windy conditions, some shooters can make an intuitive guess as to the amount of correction necessary to compensate for wind drift — often with very good results. However, the average shooter does not have this type of experience. For this reason, the new Hornady Wind Drift Tables will allow the ordinary shooter to make very close estimates of wind drift without a great deal of experience. The tables are based on the ballistic coefficient, muzzle velocity, range, and cross-range wind velocity.

Wind drift is determined by the product of "lag time" and cross range wind velocity. "Lag time" is the time difference between the actual time of flight and the time of flight that results if no decelerating forces are placed on the bullet, keeping the velocity constant.

Cross-range wind velocity refers to the speed of the wind blowing perpendicular to the direction of fire (see example 1). For most calculations the uprange or downrange components of wind velocity are of little consequence and need not be considered.

To simplify the calculations of wind drift we have calculated the lag time for various ballistic coefficients at most practical muzzle velocities, and using a cross-range wind velocity of 10 m.p.h., calculated the wind drift for each of the six listed ranges.

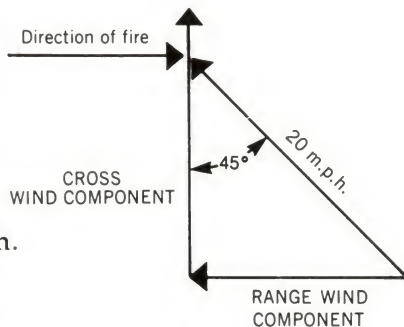
Since the tables do not show ballistic coefficients for each particular bullet, the reader can interpolate between tables to get more accurate results, though, as the following example shows, the improvement in accuracy will probably be an insignificant amount.

Also, it is unlikely that the cross-range wind velocity is always 10 m.p.h., but drifts for different wind velocities will be proportional to the drifts shown in the table. (See example 1).

**EXAMPLE 1.** Find the wind drift at 200 yards if a 55 grain SX bullet is traveling at 2900 fps with a wind velocity of 20 m.p.h. at a 45° angle to the line of fire. The B.C. of the 55 grain SX is .235. To find the direct cross wind velocity:

$$\begin{aligned}\text{cross wind} &= 20 \text{ m.p.h.} \times \sin 45^\circ \\ &= 20 \times .707 = 14 \text{ m.p.h.}\end{aligned}$$

The ratio of the new cross wind velocity to that given in the tables is  $\frac{14 \text{ m.p.h.}}{10 \text{ m.p.h.}}$  or a multiplier of 1.4.



If we want the exact wind drift for a .235 B.C. we must interpolate the data given in the tables. The tables give wind drifts for B.C.'s of .220 and .240.

200 yard wind drift for B.C. of .220 = 6.5"

200 yard wind drift for B.C. of .240 = 5.9"

By constructing a ratio of the difference of the B.C.'s and using that ratio as a multiplier we can arrive at a wind drift for our new B.C. (.235) as follows:

$$\text{Multiplier ratio} = \frac{.235 - .220}{.240 - .220} = \frac{3}{4}$$

$$6.5 - \frac{3}{4} (6.5 - 5.9) = \text{wind drift for 10 m.p.h.}$$

$$6.5 - .45 =$$

$$6.05 =$$

$$6.0'' =$$

applying the factor

for 14 m.p.h. wind we get  $1.4 \times 6.0 = 8.4''$  for 14 m.p.h.

closest B.C. (.240) we get  $5.9 \times 1.4 = 8.3''$  for 14 m.p.h.

As is readily noticeable, the difference of .1" is very small and is nearly impossible to realize with even a very good varmint rifle, and is not as great an error as misjudging the speed of the wind. Therefore, in most situations, interpolation is not necessary and the shooter need only choose the closest B.C. for acceptable results. Also, since not all winds are directly crosswind, and 10 m.p.h., interpolation here is not necessary.

**BALLISTIC COEFFICIENT: .110**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1504	1260	1096	992	917	853
WIND DRIFT (ins.)	0	1.3"	5.9"	13.7"	24.5"	37.4"	53.5"
VELOCITY (fps)	1700	1420	1198	1058	966	895	834
WIND DRIFT (ins.)	0	1.5"	6.1"	14.1"	24.6"	37.3"	53.7"
VELOCITY (fps)	1600	1336	1143	1024	941	874	816
WIND DRIFT (ins.)	0	1.5"	6.3"	14.2"	24.8"	37.1"	53.4"
VELOCITY (fps)	1500	1258	1094	991	916	852	797
WIND DRIFT (ins.)	0	1.6"	6.6"	14.4"	24.5"	36.7"	52.3"
VELOCITY (fps)	1400	1184	1050	960	890	829	777
WIND DRIFT (ins.)	0	1.7"	6.4"	13.9"	23.4"	35.4"	50.6"
VELOCITY (fps)	1300	1120	1009	930	864	807	756
WIND DRIFT (ins.)	0	1.6"	6.1"	13.1"	22.1"	33.2"	48.4"
VELOCITY (fps)	1200	1060	967	896	834	780	732
WIND DRIFT (ins.)	0	1.3"	5.4"	11.6"	20.3"	31.2"	45.5"
VELOCITY (fps)	1100	996	920	855	799	748	699
WIND DRIFT (ins.)	0	1.0"	4.6"	10.4"	18.1"	28.6"	42.9"

**BALLISTIC COEFFICIENT: .120**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1526	1296	1129	1022	947	883
WIND DRIFT (ins.)	0	1.3"	5.3"	12.5"	22.6"	34.4"	49.9"
VELOCITY (fps)	1700	1442	1229	1087	993	924	863
WIND DRIFT (ins.)	0	1.3"	5.6"	12.9"	22.9"	34.6"	49.9"
VELOCITY (fps)	1600	1356	1168	1049	966	900	843
WIND DRIFT (ins.)	0	1.3"	5.9"	13.1"	22.7"	34.6"	49.6"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1500	1275	1116	1014	940	878	823
WIND DRIFT (ins.)	0	1.5"	6.0"	13.1"	22.6"	33.9"	49.0"
VELOCITY (fps)	1400	1199	1068	980	912	854	802
WIND DRIFT (ins.)	0	1.5"	5.9"	12.9"	22.1"	32.7"	47.4"
VELOCITY (fps)	1300	1132	1024	948	885	829	780
WIND DRIFT (ins.)	0	1.4"	5.8"	12.1"	20.5"	31.3"	45.1"
VELOCITY (fps)	1200	1069	981	913	854	802	755
WIND DRIFT (ins.)	0	1.2"	4.9"	10.9"	18.8"	28.8"	42.2"
VELOCITY (fps)	1100	1003	931	870	817	769	722
WIND DRIFT (ins.)	0	1.0"	4.5"	9.7"	16.5"	25.9"	39.7"

## BALLISTIC COEFFICIENT: .130

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2400	2081	1792	1538	1321	1156	1047
WIND DRIFT (ins.)	0	.8"	3.4"	8.4"	15.9"	26.2"	40.2"
VELOCITY (fps)	2300	1990	1711	1469	1266	1119	1022
WIND DRIFT (ins.)	0	.9"	3.7"	8.8"	16.7"	27.5"	41.6"
VELOCITY (fps)	2200	1900	1632	1401	1212	1085	998
WIND DRIFT (ins.)	0	.9"	3.9"	9.4"	17.6"	28.6"	43.1"
VELOCITY (fps)	2100	1810	1554	1334	1165	1054	976
WIND DRIFT (ins.)	0	.9"	4.1"	9.9"	18.6"	29.6"	44.5"
VELOCITY (fps)	2000	1720	1477	1272	1123	1025	955
WIND DRIFT (ins.)	0	1.0"	4.4"	10.4"	19.4"	30.8"	45.6"
VELOCITY (fps)	1900	1632	1401	1212	1085	998	934
WIND DRIFT (ins.)	0	1.1"	4.7"	11.0"	20.1"	31.6"	45.9"
VELOCITY (fps)	1800	1546	1328	1160	1051	973	910
WIND DRIFT (ins.)	0	1.1"	4.8"	11.5"	20.6"	32.1"	46.6"
VELOCITY (fps)	1700	1460	1258	1114	1019	949	889
WIND DRIFT (ins.)	0	1.2"	5.2"	12.0"	21.2"	32.5"	46.7"
VELOCITY (fps)	1600	1374	1193	1072	989	925	868
WIND DRIFT (ins.)	0	1.3"	5.3"	12.3"	21.2"	32.3"	46.5"
VELOCITY (fps)	1500	1291	1136	1034	960	900	847
WIND DRIFT (ins.)	0	1.3"	5.5"	12.2"	21.3"	32.0"	46.0"
VELOCITY (fps)	1400	1212	1085	998	932	875	825
WIND DRIFT (ins.)	0	1.3"	5.4"	11.9"	20.6"	31.0"	44.5"
VELOCITY (fps)	1300	1142	1038	964	903	850	802
WIND DRIFT (ins.)	0	1.3"	5.3"	11.1"	19.3"	28.7"	42.4"
VELOCITY (fps)	1200	1077	993	928	871	821	776
WIND DRIFT (ins.)	0	1.2"	4.5"	10.1"	17.7"	26.9"	39.4"
VELOCITY (fps)	1100	1009	941	883	832	786	742
WIND DRIFT (ins.)	0	1.0"	4.1"	9.1"	15.7"	24.4"	37.2"
VELOCITY (fps)	1000	934	877	827	781	739	695
WIND DRIFT (ins.)	0	.9"	3.6"	7.7"	14.6"	22.9"	36.2"
VELOCITY (fps)	900	847	800	757	716	677	635
WIND DRIFT (ins.)	0	.7"	3.1"	7.6"	14.3"	23.3"	37.6"
VELOCITY (fps)	800	757	717	678	641	607	566
WIND DRIFT (ins.)	0	.8"	2.9"	8.1"	15.6"	24.0"	42.1"

## BALLISTIC COEFFICIENT: .140

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2400	2103	1832	1590	1380	1207	1088
WIND DRIFT (ins.)	0	.7"	3.2"	7.6"	14.4"	24.0"	36.6"
VELOCITY (fps)	2300	2012	1749	1518	1318	1163	1058
WIND DRIFT (ins.)	0	.7"	3.3"	8.1"	15.3"	25.2"	38.3"
VELOCITY (fps)	2200	1921	1668	1448	1261	1124	1031
WIND DRIFT (ins.)	0	.8"	3.6"	8.5"	16.1"	26.4"	39.5"
VELOCITY (fps)	2100	1830	1588	1378	1206	1088	1006
WIND DRIFT (ins.)	0	.8"	3.8"	9.1"	17.0"	27.5"	41.3"
VELOCITY (fps)	2000	1739	1509	1311	1159	1056	982
WIND DRIFT (ins.)	0	.9"	4.0"	9.6"	17.7"	28.4"	42.5"
VELOCITY (fps)	1900	1650	1432	1249	1116	1026	960
WIND DRIFT (ins.)	0	1.0"	4.3"	10.1"	18.7"	29.4"	43.5"



RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1563	1356	1190	1078	998	938
WIND DRIFT (ins.)	0	1.0"	4.5"	10.6"	19.1"	29.9"	43.8"
VELOCITY (fps)	1700	1476	1284	1140	1043	972	913
WIND DRIFT (ins.)	0	1.1"	4.7"	11.0"	19.6"	30.2"	43.9"
VELOCITY (fps)	1600	1389	1214	1094	1010	946	891
WIND DRIFT (ins.)	0	1.2"	5.0"	11.3"	19.9"	30.5"	43.9"
VELOCITY (fps)	1500	1304	1153	1052	979	921	868
WIND DRIFT (ins.)	0	1.2"	5.2"	11.6"	19.8"	29.8"	43.2"
VELOCITY (fps)	1400	1223	1100	1014	950	895	845
WIND DRIFT (ins.)	0	1.3"	5.0"	11.2"	19.1"	28.8"	41.9"
VELOCITY (fps)	1300	1151	1051	978	920	868	821
WIND DRIFT (ins.)	0	1.3"	4.8"	10.5"	17.8"	27.1"	39.9"
VELOCITY (fps)	1200	1084	1003	941	887	838	794
WIND DRIFT (ins.)	0	1.2"	4.3"	9.3"	16.1"	25.2"	37.0"
VELOCITY (fps)	1100	1015	950	895	846	802	759
WIND DRIFT (ins.)	0	.7"	3.7"	8.3"	14.5"	22.4"	34.7"

**BALLISTIC COEFFICIENT: .150**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2400	2122	1866	1635	1433	1260	1133
WIND DRIFT (ins.)	0	.7"	2.9"	7.1"	13.3"	21.9"	33.8"
VELOCITY (fps)	2300	2030	1782	1561	1367	1208	1095
WIND DRIFT (ins.)	0	.7"	3.1"	7.5"	14.0"	23.0"	35.4"
VELOCITY (fps)	2200	1938	1700	1489	1306	1163	1064
WIND DRIFT (ins.)	0	.8"	3.3"	7.9"	14.8"	24.3"	37.0"
VELOCITY (fps)	2100	1847	1618	1418	1248	1123	1035
WIND DRIFT (ins.)	0	.8"	3.5"	8.3"	15.6"	25.3"	38.1"
VELOCITY (fps)	2000	1755	1538	1347	1193	1086	1009
WIND DRIFT (ins.)	0	.9"	3.7"	8.9"	16.4"	26.3"	39.3"
VELOCITY (fps)	1900	1666	1459	1282	1146	1053	984
WIND DRIFT (ins.)	0	.9"	4.0"	9.3"	17.2"	27.3"	40.4"
VELOCITY (fps)	1800	1578	1382	1219	1103	1022	961
WIND DRIFT (ins.)	0	.9"	4.2"	9.8"	18.0"	27.9"	41.3"
VELOCITY (fps)	1700	1490	1307	1164	1065	993	937
WIND DRIFT (ins.)	0	1.0"	4.4"	10.2"	18.5"	28.5"	42.0"
VELOCITY (fps)	1600	1402	1235	1114	1030	966	912
WIND DRIFT (ins.)	0	1.1"	4.7"	10.8"	18.7"	28.6"	41.5"
VELOCITY (fps)	1500	1316	1170	1070	997	939	888
WIND DRIFT (ins.)	0	1.1"	4.9"	10.7"	18.5"	28.4"	41.0"
VELOCITY (fps)	1400	1234	1114	1029	965	912	864
WIND DRIFT (ins.)	0	1.2"	4.7"	10.7"	18.3"	27.5"	39.5"
VELOCITY (fps)	1300	1159	1062	991	934	884	839
WIND DRIFT (ins.)	0	1.2"	4.6"	9.8"	17.2"	25.9"	37.7"
VELOCITY (fps)	1200	1091	1012	952	900	854	810
WIND DRIFT (ins.)	0	.9"	4.2"	9.0"	15.5"	23.2"	35.0"
VELOCITY (fps)	1100	1020	958	905	858	816	774
WIND DRIFT (ins.)	0	.6"	3.3"	7.9"	13.8"	20.9"	32.4"

**BALLISTIC COEFFICIENT: .160**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	2400	2138	1897	1676	1481	1309	1175
WIND DRIFT (ins.)	0	.6"	2.7"	6.5"	12.3"	20.3"	31.5"
VELOCITY (fps)	2300	2046	1812	1601	1414	1254	1136
WIND DRIFT (ins.)	0	.7"	2.9"	6.9"	13.0"	21.4"	32.7"
VELOCITY (fps)	2200	1954	1728	1526	1348	1202	1096
WIND DRIFT (ins.)	0	.7"	3.0"	7.3"	13.7"	22.4"	34.3"
VELOCITY (fps)	2100	1862	1645	1453	1286	1156	1064
WIND DRIFT (ins.)	0	.7"	3.3"	7.8"	14.5"	23.6"	35.5"
VELOCITY (fps)	2000	1770	1564	1381	1227	1115	1034
WIND DRIFT (ins.)	0	.8"	3.4"	8.2"	15.3"	24.6"	37.1"
VELOCITY (fps)	1900	1680	1484	1312	1175	1078	1007
WIND DRIFT (ins.)	0	.8"	3.6"	8.7"	16.1"	25.7"	38.3"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1591	1405	1247	1129	1045	982
WIND DRIFT (ins.)	0	.9"	3.9"	9.2"	16.7"	26.3"	38.9"
VELOCITY (fps)	1700	1502	1327	1186	1087	1013	957
WIND DRIFT (ins.)	0	1.0"	4.2"	9.7"	17.2"	27.0"	39.8"
VELOCITY (fps)	1600	1414	1254	1134	1048	984	933
WIND DRIFT (ins.)	0	1.0"	4.3"	9.9"	17.8"	27.2"	39.5"
VELOCITY (fps)	1500	1326	1185	1086	1013	956	906
WIND DRIFT (ins.)	0	1.1"	4.6"	10.1"	17.6"	26.8"	38.8"
VELOCITY (fps)	1400	1243	1126	1043	980	928	881
WIND DRIFT (ins.)	0	1.2"	4.6"	10.0"	17.2"	26.1"	37.6"
VELOCITY (fps)	1300	1167	1073	1003	948	899	854
WIND DRIFT (ins.)	0	1.0"	4.2"	9.2"	15.9"	24.5"	35.6"
VELOCITY (fps)	1200	1097	1021	962	912	867	825
WIND DRIFT (ins.)	0	.8"	3.7"	8.5"	14.8"	22.4"	33.1"
VELOCITY (fps)	1100	1024	965	915	869	828	788
WIND DRIFT (ins.)	0	.6"	3.0"	7.0"	13.0"	20.1"	31.1"

**BALLISTIC COEFFICIENT: .180**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	4100	3778	3470	3176	2896	2631	2388
WIND DRIFT (ins.)	0	.3"	1.1"	2.6"	4.9"	8.0"	12.4"
VELOCITY (fps)	4000	3682	3379	3089	2814	2553	2315
WIND DRIFT (ins.)	0	.3"	1.1"	2.7"	5.1"	8.3"	12.7"
VELOCITY (fps)	3900	3587	3288	3002	2731	2475	2243
WIND DRIFT (ins.)	0	.3"	1.2"	2.8"	5.3"	8.7"	13.4"
VELOCITY (fps)	3800	3491	3197	2916	2649	2398	2172
WIND DRIFT (ins.)	0	.3"	1.2"	2.9"	5.5"	9.0"	13.9"
VELOCITY (fps)	3700	3396	3106	2829	2567	2322	2101
WIND DRIFT (ins.)	0	.3"	1.3"	3.1"	5.7"	9.4"	14.4"
VELOCITY (fps)	3600	3301	3015	2743	2486	2246	2030
WIND DRIFT (ins.)	0	.3"	1.3"	3.2"	6.0"	9.8"	15.0"
VELOCITY (fps)	3500	3205	2924	2657	2405	2171	1960
WIND DRIFT (ins.)	0	.3"	1.4"	3.3"	6.2"	10.2"	15.7"
VELOCITY (fps)	3400	3110	2834	2571	2325	2096	1891
WIND DRIFT (ins.)	0	.3"	1.5"	3.5"	6.5"	10.7"	16.5"
VELOCITY (fps)	3300	3015	2743	2486	2246	2022	1823
WIND DRIFT (ins.)	0	.3"	1.5"	3.6"	6.8"	11.2"	17.4"
VELOCITY (fps)	3200	2920	2653	2401	2167	1949	1755
WIND DRIFT (ins.)	0	.4"	1.6"	3.8"	7.1"	11.7"	18.0"
VELOCITY (fps)	3100	2825	2563	2317	2089	1877	1689
WIND DRIFT (ins.)	0	.4"	1.7"	4.0"	7.5"	12.3"	19.2"
VELOCITY (fps)	3000	2730	2473	2234	2011	1805	1624
WIND DRIFT (ins.)	0	.4"	1.8"	4.2"	7.9"	12.9"	20.2"
VELOCITY (fps)	2900	2635	2384	2151	1935	1734	1561
WIND DRIFT (ins.)	0	.4"	1.9"	4.4"	8.2"	13.5"	20.9"
VELOCITY (fps)	2800	2540	2296	2069	1858	1665	1489
WIND DRIFT (ins.)	0	.4"	2.0"	4.6"	8.7"	14.2"	22.0"
VELOCITY (fps)	2700	2446	2209	1988	1783	1597	1429
WIND DRIFT (ins.)	0	.5"	2.0"	4.9"	9.1"	14.9"	23.1"
VELOCITY (fps)	2600	2353	2122	1907	1709	1530	1369
WIND DRIFT (ins.)	0	.5"	2.1"	5.1"	9.6"	15.8"	24.4"
VELOCITY (fps)	2500	2259	2035	1827	1636	1465	1313
WIND DRIFT (ins.)	0	.5"	2.3"	5.4"	10.1"	16.6"	25.5"
VELOCITY (fps)	2400	2166	1948	1747	1564	1401	1259
WIND DRIFT (ins.)	0	.6"	2.4"	5.7"	10.7"	17.5"	27.1"
VELOCITY (fps)	2300	2073	1862	1668	1494	1338	1209
WIND DRIFT (ins.)	0	.6"	2.5"	6.0"	11.2"	18.4"	28.6"
VELOCITY (fps)	2200	1980	1776	1590	1424	1279	1164
WIND DRIFT (ins.)	0	.6"	2.7"	6.4"	11.9"	19.4"	30.2"
VELOCITY (fps)	2100	1887	1691	1514	1356	1222	1124
WIND DRIFT (ins.)	0	.7"	2.8"	6.8"	12.6"	20.5"	31.7"
VELOCITY (fps)	2000	1794	1607	1439	1291	1172	1084
WIND DRIFT (ins.)	0	.7"	3.0"	7.2"	13.4"	21.6"	33.0"
VELOCITY (fps)	1900	1703	1525	1365	1230	1128	1051
WIND DRIFT (ins.)	0	.7"	3.2"	7.6"	14.1"	22.4"	34.2"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	1800	1613	1444	1295	1175	1088	1021
WIND DRIFT (ins.)	0	.7"	3.4"	8.1"	14.8"	23.4"	35.2"
VELOCITY (fps)	1700	1523	1364	1228	1126	1051	993
WIND DRIFT (ins.)	0	.8"	3.5"	8.4"	15.3"	24.0"	35.6"
VELOCITY (fps)	1600	1433	1286	1169	1083	1017	966
WIND DRIFT (ins.)	0	.9"	3.9"	8.8"	15.7"	24.6"	36.3"
VELOCITY (fps)	1500	1344	1213	1115	1042	986	940
WIND DRIFT (ins.)	0	.9"	3.9"	9.1"	16.0"	24.1"	35.9"

**BALLISTIC COEFFICIENT: .200**

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	4100	3809	3530	3262	3006	2761	2535
WIND DRIFT (ins.)	0	.2"	1.0"	2.3"	4.3"	7.1"	10.7"
VELOCITY (fps)	4000	3713	3438	3174	2922	2681	2459
WIND DRIFT (ins.)	0	.2"	1.0"	2.4"	4.5"	7.3"	11.3"
VELOCITY (fps)	3900	3617	3346	3086	2838	2601	2384
WIND DRIFT (ins.)	0	.3"	1.1"	2.5"	4.6"	7.6"	11.8"
VELOCITY (fps)	3800	3522	3254	2998	2754	2521	2309
WIND DRIFT (ins.)	0	.2"	1.1"	2.6"	4.8"	7.9"	12.3"
VELOCITY (fps)	3700	3426	3162	2911	2670	2442	2235
WIND DRIFT (ins.)	0	.3"	1.2"	2.7"	5.1"	8.2"	12.6"
VELOCITY (fps)	3600	3330	3071	2823	2587	2363	2162
WIND DRIFT (ins.)	0	.3"	1.2"	2.8"	5.2"	8.6"	13.2"
VELOCITY (fps)	3500	3234	2979	2736	2504	2286	2089
WIND DRIFT (ins.)	0	.3"	1.2"	2.9"	5.5"	9.0"	13.9"
VELOCITY (fps)	3400	3138	2888	2648	2421	2208	2016
WIND DRIFT (ins.)	0	.3"	1.3"	3.1"	5.8"	9.4"	14.4"
VELOCITY (fps)	3300	3043	2796	2561	2340	2132	1945
WIND DRIFT (ins.)	0	.3"	1.4"	3.2"	6.0"	9.8"	15.3"
VELOCITY (fps)	3200	2947	2705	2475	2259	2056	1874
WIND DRIFT (ins.)	0	.3"	1.4"	3.4"	6.3"	10.3"	16.0"
VELOCITY (fps)	3100	2851	2614	2389	2178	1980	1803
WIND DRIFT (ins.)	0	.4"	1.5"	3.5"	6.6"	10.8"	16.7"
VELOCITY (fps)	3000	2756	2523	2304	2098	1906	1734
WIND DRIFT (ins.)	0	.4"	1.6"	3.7"	6.9"	11.3"	17.7"
VELOCITY (fps)	2900	2661	2433	2219	2019	1832	1666
WIND DRIFT (ins.)	0	.4"	1.6"	3.9"	7.3"	11.9"	18.3"
VELOCITY (fps)	2800	2565	2343	2135	1940	1758	1600
WIND DRIFT (ins.)	0	.4"	1.7"	4.1"	7.7"	12.5"	19.1"
VELOCITY (fps)	2700	2471	2255	2052	1863	1687	1535
WIND DRIFT (ins.)	0	.4"	1.8"	4.3"	8.0"	13.1"	20.1"
VELOCITY (fps)	2600	2377	2166	1969	1785	1617	1462
WIND DRIFT (ins.)	0	.4"	1.9"	4.6"	8.5"	13.8"	21.4"
VELOCITY (fps)	2500	2283	2078	1887	1709	1548	1400
WIND DRIFT (ins.)	0	.4"	2.0"	4.8"	8.9"	14.5"	22.6"
VELOCITY (fps)	2400	2189	1991	1805	1634	1480	1339
WIND DRIFT (ins.)	0	.5"	2.1"	5.1"	9.5"	15.4"	23.8"
VELOCITY (fps)	2300	2095	1903	1724	1561	1413	1282
WIND DRIFT (ins.)	0	.5"	2.2"	5.3"	9.9"	16.2"	25.2"
VELOCITY (fps)	2200	2001	1815	1644	1488	1348	1228
WIND DRIFT (ins.)	0	.6"	2.4"	5.6"	10.6"	17.1"	26.3"
VELOCITY (fps)	2100	1908	1728	1565	1417	1286	1179
WIND DRIFT (ins.)	0	.6"	2.6"	6.0"	11.1"	18.1"	28.1"
VELOCITY (fps)	2000	1814	1643	1487	1347	1227	1136
WIND DRIFT (ins.)	0	.6"	2.7"	6.4"	11.8"	19.1"	29.3"
VELOCITY (fps)	1900	1722	1559	1411	1281	1174	1093
WIND DRIFT (ins.)	0	.6"	2.8"	6.8"	12.5"	20.2"	30.3"
VELOCITY (fps)	1800	1630	1476	1337	1219	1128	1058
WIND DRIFT (ins.)	0	.7"	3.0"	7.1"	13.0"	20.9"	31.4"
VELOCITY (fps)	1700	1540	1394	1266	1163	1086	1025
WIND DRIFT (ins.)	0	.7"	3.2"	7.6"	13.8"	21.7"	32.3"
VELOCITY (fps)	1600	1449	1313	1200	1114	1048	995
WIND DRIFT (ins.)	0	.8"	3.4"	7.9"	14.1"	22.0"	32.6"
VELOCITY (fps)	1500	1358	1237	1141	1069	1012	966
WIND DRIFT (ins.)	0	.9"	3.5"	8.2"	14.4"	22.4"	32.6"



## BALLISTIC COEFFICIENT: .220

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	4000	3739	3487	3245	3012	2789	2582
WIND DRIFT (ins.)	0	.2"	.9"	2.2"	4.0"	6.5"	10.0"
VELOCITY (fps)	3900	3643	3394	3156	2926	2707	2504
WIND DRIFT (ins.)	0	.2"	1.0"	2.2"	4.2"	6.8"	10.5"
VELOCITY (fps)	3800	3546	3302	3067	2841	2625	2426
WIND DRIFT (ins.)	0	.2"	1.0"	2.3"	4.3"	7.0"	10.8"
VELOCITY (fps)	3700	3450	3209	2978	2756	2544	2350
WIND DRIFT (ins.)	0	.2"	1.0"	2.4"	4.5"	7.3"	11.4"
VELOCITY (fps)	3600	3354	3117	2889	2671	2463	2273
WIND DRIFT (ins.)	0	.2"	1.1"	2.5"	4.7"	7.7"	11.9"
VELOCITY (fps)	3500	3258	3024	2801	2586	2383	2198
WIND DRIFT (ins.)	0	.2"	1.1"	2.6"	4.9"	8.0"	12.4"
VELOCITY (fps)	3400	3162	2932	2712	2502	2303	2123
WIND DRIFT (ins.)	0	.3"	1.2"	2.8"	5.1"	8.4"	12.9"
VELOCITY (fps)	3300	3066	2840	2624	2418	2224	2049
WIND DRIFT (ins.)	0	.3"	1.2"	2.9"	5.4"	8.8"	13.6"
VELOCITY (fps)	3200	2969	2748	2536	2335	2146	1975
WIND DRIFT (ins.)	0	.3"	1.3"	3.0"	5.6"	9.2"	14.3"
VELOCITY (fps)	3100	2874	2656	2449	2253	2068	1902
WIND DRIFT (ins.)	0	.3"	1.3"	3.2"	5.9"	9.6"	14.8"
VELOCITY (fps)	3000	2778	2564	2362	2171	1991	1830
WIND DRIFT (ins.)	0	.3"	1.4"	3.3"	6.2"	10.1"	15.8"
VELOCITY (fps)	2900	2682	2473	2276	2090	1915	1758
WIND DRIFT (ins.)	0	.3"	1.5"	3.5"	6.5"	10.6"	16.4"
VELOCITY (fps)	2800	2586	2383	2190	2009	1839	1688
WIND DRIFT (ins.)	0	.4"	1.5"	3.7"	6.9"	11.1"	17.3"
VELOCITY (fps)	2700	2491	2293	2106	1930	1764	1620
WIND DRIFT (ins.)	0	.4"	1.6"	3.9"	7.2"	11.7"	18.4"
VELOCITY (fps)	2600	2396	2203	2022	1851	1691	1553
WIND DRIFT (ins.)	0	.4"	1.7"	4.0"	7.5"	12.3"	19.1"
VELOCITY (fps)	2500	2302	2114	1938	1772	1619	1477
WIND DRIFT (ins.)	0	.4"	1.8"	4.3"	7.9"	13.0"	20.1"
VELOCITY (fps)	2400	2207	2025	1854	1694	1548	1412
WIND DRIFT (ins.)	0	.5"	1.9"	4.5"	8.4"	13.7"	21.3"
VELOCITY (fps)	2300	2113	1937	1771	1618	1478	1349
WIND DRIFT (ins.)	0	.5"	2.0"	4.8"	8.9"	14.5"	22.4"
VELOCITY (fps)	2200	2019	1848	1689	1543	1409	1289
WIND DRIFT (ins.)	0	.5"	2.2"	5.0"	9.4"	15.4"	23.8"
VELOCITY (fps)	2100	1925	1760	1608	1469	1342	1233
WIND DRIFT (ins.)	0	.5"	2.2"	5.4"	10.0"	16.2"	24.9"
VELOCITY (fps)	2000	1831	1673	1528	1396	1279	1182
WIND DRIFT (ins.)	0	.5"	2.4"	5.8"	10.6"	17.1"	26.6"
VELOCITY (fps)	1900	1737	1587	1450	1325	1219	1137
WIND DRIFT (ins.)	0	.6"	2.6"	6.1"	11.3"	18.0"	28.0"
VELOCITY (fps)	1800	1645	1503	1373	1259	1165	1092
WIND DRIFT (ins.)	0	.6"	2.7"	6.4"	11.8"	19.1"	28.8"
VELOCITY (fps)	1700	1554	1419	1299	1197	1118	1056
WIND DRIFT (ins.)	0	.6"	2.9"	6.7"	12.4"	19.8"	29.6"
VELOCITY (fps)	1600	1462	1336	1228	1142	1075	1022
WIND DRIFT (ins.)	0	.7"	3.1"	7.1"	12.8"	20.3"	30.2"

## BALLISTIC COEFFICIENT: .240

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3800	3567	3342	3124	2915	2713	2527
WIND DRIFT (ins.)	0	.2"	.9"	2.1"	3.9"	6.4"	9.8"
VELOCITY (fps)	3700	3470	3249	3035	2829	2630	2448
WIND DRIFT (ins.)	0	.2"	.9"	2.2"	4.1"	6.6"	10.2"
VELOCITY (fps)	3600	3374	3155	2945	2742	2548	2370
WIND DRIFT (ins.)	0	.2"	1.0"	2.3"	4.3"	6.9"	10.8"
VELOCITY (fps)	3500	3277	3062	2855	2656	2466	2292
WIND DRIFT (ins.)	0	.3"	1.0"	2.4"	4.5"	7.2"	11.1"
VELOCITY (fps)	3400	3181	2970	2766	2570	2384	2215
WIND DRIFT (ins.)	0	.2"	1.0"	2.5"	4.7"	7.5"	11.8"
VELOCITY (fps)	3300	3085	2877	2677	2485	2303	2138
WIND DRIFT (ins.)	0	.2"	1.1"	2.6"	4.9"	7.9"	12.2"

RANGE	MUZZLE	50 yds.	100 yds.	150 yds.	200 yds.	250 yds.	300 yds.
VELOCITY (fps)	3200	2988	2784	2588	2401	2223	2062
WIND DRIFT (ins.)	0	.3"	1.2"	2.7"	5.1"	8.3"	12.7"
VELOCITY (fps)	3100	2892	2691	2499	2317	2143	1987
WIND DRIFT (ins.)	0	.3"	1.2"	2.9"	5.3"	8.7"	13.3"
VELOCITY (fps)	3000	2796	2599	2411	2233	2064	1912
WIND DRIFT (ins.)	0	.3"	1.3"	3.0"	5.6"	9.1"	14.0"
VELOCITY (fps)	2900	2700	2507	2324	2150	1986	1838
WIND DRIFT (ins.)	0	.3"	1.3"	3.2"	5.9"	9.6"	14.8"
VELOCITY (fps)	2800	2603	2416	2237	2068	1909	1765
WIND DRIFT (ins.)	0	.3"	1.4"	3.4"	6.2"	10.0"	15.3"
VELOCITY (fps)	2700	2508	2325	2151	1987	1832	1694
WIND DRIFT (ins.)	0	.3"	1.5"	3.5"	6.5"	10.5"	16.5"
VELOCITY (fps)	2600	2413	2235	2066	1906	1755	1624
WIND DRIFT (ins.)	0	.3"	1.5"	3.7"	6.9"	11.2"	17.3"
VELOCITY (fps)	2500	2318	2145	1981	1826	1681	1555
WIND DRIFT (ins.)	0	.4"	1.6"	3.9"	7.2"	11.7"	18.5"
VELOCITY (fps)	2400	2223	2055	1896	1746	1607	1477
WIND DRIFT (ins.)	0	.4"	1.7"	4.1"	7.6"	12.4"	19.1"
VELOCITY (fps)	2300	2128	1965	1811	1667	1534	1411
WIND DRIFT (ins.)	0	.4"	1.9"	4.3"	8.1"	13.1"	20.0"
VELOCITY (fps)	2200	2034	1876	1727	1590	1463	1346
WIND DRIFT (ins.)	0	.4"	1.9"	4.6"	8.5"	13.9"	21.2"
VELOCITY (fps)	2100	1939	1786	1644	1513	1393	1284
WIND DRIFT (ins.)	0	.5"	2.1"	4.9"	9.1"	14.6"	22.7"
VELOCITY (fps)	2000	1844	1698	1563	1438	1325	1227
WIND DRIFT (ins.)	0	.5"	2.2"	5.2"	9.7"	15.5"	24.0"
VELOCITY (fps)	1900	1750	1611	1483	1365	1261	1175
WIND DRIFT (ins.)	0	.5"	2.3"	5.5"	10.1"	16.3"	25.6"
VELOCITY (fps)	1800	1657	1525	1404	1295	1201	1129
WIND DRIFT (ins.)	0	.6"	2.6"	5.9"	10.7"	17.3"	26.7"
VELOCITY (fps)	1700	1565	1441	1327	1228	1148	1083
WIND DRIFT (ins.)	0	.6"	2.6"	6.1"	11.3"	18.0"	27.5"
VELOCITY (fps)	1600	1473	1356	1253	1168	1101	1046
WIND DRIFT (ins.)	0	.6"	2.8"	6.6"	11.8"	18.6"	28.3"

**BALLISTIC COEFFICIENT: .240**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3343	2917	2523	2165	1845	1573
WIND DRIFT (ins.)	0	.9"	3.9"	9.4"	18.2"	30.7"	48.6"
VELOCITY (fps)	3700	3249	2830	2444	2095	1781	1509
WIND DRIFT (ins.)	0	1.0"	4.1"	9.8"	18.9"	31.9"	50.6"
VELOCITY (fps)	3600	3156	2744	2365	2024	1719	1457
WIND DRIFT (ins.)	0	1.0"	4.3"	10.3"	19.8"	33.4"	52.8"
VELOCITY (fps)	3500	3063	2658	2287	1954	1658	1405
WIND DRIFT (ins.)	0	1.0"	4.4"	10.8"	20.7"	34.9"	54.9"
VELOCITY (fps)	3400	2971	2572	2210	1885	1598	1355
WIND DRIFT (ins.)	0	1.0"	4.6"	11.2"	21.5"	36.5"	57.8"
VELOCITY (fps)	3300	2878	2487	2133	1816	1540	1307
WIND DRIFT (ins.)	0	1.1"	4.8"	11.8"	22.6"	38.1"	60.4"
VELOCITY (fps)	3200	2785	2402	2057	1749	1482	1262
WIND DRIFT (ins.)	0	1.2"	5.1"	12.3"	23.5"	39.9"	63.2"
VELOCITY (fps)	3100	2692	2318	1982	1683	1426	1219
WIND DRIFT (ins.)	0	1.2"	5.3"	12.9"	24.7"	41.9"	66.1"
VELOCITY (fps)	3000	2599	2235	1907	1617	1371	1181
WIND DRIFT (ins.)	0	1.3"	5.5"	13.5"	26.0"	43.9"	68.8"
VELOCITY (fps)	2900	2508	2152	1833	1554	1318	1146
WIND DRIFT (ins.)	0	1.3"	5.8"	14.2"	27.3"	46.0"	72.1"
VELOCITY (fps)	2800	2416	2070	1760	1492	1269	1110
WIND DRIFT (ins.)	0	1.4"	6.2"	14.9"	28.6"	48.1"	75.2"
VELOCITY (fps)	2700	2326	1989	1688	1431	1221	1081
WIND DRIFT (ins.)	0	1.5"	6.5"	15.8"	30.2"	50.6"	78.5"
VELOCITY (fps)	2600	2236	1908	1618	1372	1179	1055
WIND DRIFT (ins.)	0	1.5"	6.8"	16.6"	31.7"	52.9"	81.6"
VELOCITY (fps)	2500	2146	1827	1549	1314	1141	1030
WIND DRIFT (ins.)	0	1.6"	7.2"	17.5"	33.4"	55.3"	84.3"
VELOCITY (fps)	2400	2056	1747	1481	1260	1106	1007
WIND DRIFT (ins.)	0	1.7"	7.6"	18.4"	35.1"	58.0"	87.8"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2300	1966	1669	1415	1209	1074	985
WIND DRIFT (ins.)	0	1.8"	8.0"	19.4"	36.8"	60.4"	90.4"
VELOCITY (fps)	2200	1877	1591	1348	1163	1045	965
WIND DRIFT (ins.)	0	1.9"	8.5"	20.5"	38.7"	62.6"	93.6"
VELOCITY (fps)	2100	1787	1515	1286	1123	1018	945
WIND DRIFT (ins.)	0	1.9"	8.9"	21.7"	40.5"	64.9"	95.9"
VELOCITY (fps)	2000	1699	1440	1228	1066	993	925
WIND DRIFT (ins.)	0	2.1"	9.5"	22.8"	42.2"	66.5"	98.0"
VELOCITY (fps)	1900	1612	1366	1175	1053	969	903
WIND DRIFT (ins.)	0	2.3"	9.9"	23.8"	43.5"	68.1"	98.6"
VELOCITY (fps)	1800	1526	1296	1129	1022	947	883
WIND DRIFT (ins.)	0	2.5"	10.6"	25.1"	45.1"	68.8"	99.9"
VELOCITY (fps)	1700	1442	1229	1087	993	924	863
WIND DRIFT (ins.)	0	2.5"	11.2"	25.8"	45.8"	69.3"	99.7"
VELOCITY (fps)	1600	1356	1168	1049	966	900	843
WIND DRIFT (ins.)	0	2.7"	11.8"	26.2"	45.5"	69.3"	99.2"

## BALLISTIC COEFFICIENT: .270

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3800	3392	3008	2650	2319	2018	1755
WIND DRIFT (ins.)	0	.8"	3.4"	8.2"	15.6"	26.2"	41.2"
VELOCITY (fps)	3700	3298	2921	2568	2245	1951	1694
WIND DRIFT (ins.)	0	.8"	3.5"	8.5"	16.2"	27.2"	43.0"
VELOCITY (fps)	3600	3204	2833	2487	2171	1884	1635
WIND DRIFT (ins.)	0	.9"	3.7"	8.9"	17.0"	28.4"	44.3"
VELOCITY (fps)	3500	3110	2745	2406	2097	1817	1578
WIND DRIFT (ins.)	0	.9"	3.9"	9.3"	17.8"	29.7"	46.6"
VELOCITY (fps)	3400	3017	2658	2326	2025	1752	1511
WIND DRIFT (ins.)	0	.9"	4.0"	9.8"	18.5"	31.0"	48.5"
VELOCITY (fps)	3300	2923	2570	2247	1952	1687	1456
WIND DRIFT (ins.)	0	1.0"	4.2"	10.1"	19.4"	32.5"	50.8"
VELOCITY (fps)	3200	2830	2484	2168	1881	1625	1402
WIND DRIFT (ins.)	0	1.0"	4.4"	10.7"	20.3"	34.0"	53.4"
VELOCITY (fps)	3100	2736	2398	2090	1810	1563	1349
WIND DRIFT (ins.)	0	1.1"	4.6"	11.2"	21.4"	35.7"	55.9"
VELOCITY (fps)	3000	2643	2313	2012	1741	1503	1300
WIND DRIFT (ins.)	0	1.1"	4.8"	11.8"	22.3"	37.3"	58.7"
VELOCITY (fps)	2900	2549	2228	1935	1672	1444	1253
WIND DRIFT (ins.)	0	1.2"	5.1"	12.3"	23.5"	39.2"	61.1"
VELOCITY (fps)	2800	2457	2144	1859	1605	1386	1208
WIND DRIFT (ins.)	0	1.2"	5.3"	13.0"	24.7"	41.2"	64.3"
VELOCITY (fps)	2700	2365	2060	1783	1540	1330	1169
WIND DRIFT (ins.)	0	1.3"	5.7"	13.6"	25.9"	43.1"	67.6"
VELOCITY (fps)	2600	2274	1977	1709	1476	1278	1134
WIND DRIFT (ins.)	0	1.4"	6.0"	14.4"	27.3"	45.3"	70.6"
VELOCITY (fps)	2500	2183	1895	1637	1413	1227	1097
WIND DRIFT (ins.)	0	1.4"	6.3"	15.1"	28.7"	47.7"	73.5"
VELOCITY (fps)	2400	2092	1813	1565	1351	1182	1067
WIND DRIFT (ins.)	0	1.5"	6.6"	16.0"	30.2"	49.9"	77.0"
VELOCITY (fps)	2300	2001	1731	1494	1292	1141	1040
WIND DRIFT (ins.)	0	1.6"	7.0"	16.9"	32.0"	52.6"	79.5"
VELOCITY (fps)	2200	1911	1651	1425	1237	1105	1015
WIND DRIFT (ins.)	0	1.7"	7.4"	17.9"	33.7"	54.8"	83.0"
VELOCITY (fps)	2100	1820	1572	1356	1186	1071	991
WIND DRIFT (ins.)	0	1.8"	7.8"	18.9"	35.1"	57.0"	84.7"
VELOCITY (fps)	2000	1730	1494	1292	1141	1041	969
WIND DRIFT (ins.)	0	1.9"	8.3"	19.9"	37.1"	58.9"	87.1"
VELOCITY (fps)	1900	1642	1417	1231	1101	1012	947
WIND DRIFT (ins.)	0	2.0"	8.9"	21.1"	38.5"	60.9"	89.6"
VELOCITY (fps)	1800	1555	1342	1176	1064	986	926
WIND DRIFT (ins.)	0	2.1"	9.3"	21.9"	40.1"	61.7"	90.6"
VELOCITY (fps)	1700	1468	1271	1127	1031	961	902
WIND DRIFT (ins.)	0	2.3"	10.0"	23.1"	40.9"	62.4"	90.8"
VELOCITY (fps)	1600	1382	1204	1083	999	936	880
WIND DRIFT (ins.)	0	2.4"	10.2"	23.7"	41.6"	62.5"	90.6"



**BALLISTIC COEFFICIENT: .300**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	4000	3621	3262	2923	2604	2309	2045
WIND DRIFT (ins.)	0	.6"	2.8"	6.7"	12.7"	21.0"	32.4"
VELOCITY (fps)	3900	3526	3172	2839	2526	2236	1979
WIND DRIFT (ins.)	0	.7"	2.9"	7.0"	13.1"	21.8"	34.2"
VELOCITY (fps)	3800	3431	3083	2755	2448	2165	1914
WIND DRIFT (ins.)	0	.7"	3.0"	7.2"	13.7"	22.7"	35.5"
VELOCITY (fps)	3700	3337	2994	2671	2370	2094	1849
WIND DRIFT (ins.)	0	.7"	3.2"	7.6"	14.3"	23.7"	37.1"
VELOCITY (fps)	3600	3242	2905	2587	2293	2023	1784
WIND DRIFT (ins.)	0	.8"	3.3"	7.9"	14.9"	24.7"	38.8"
VELOCITY (fps)	3500	3148	2816	2505	2217	1953	1721
WIND DRIFT (ins.)	0	.8"	3.4"	8.2"	15.5"	25.9"	40.2"
VELOCITY (fps)	3400	3054	2727	2422	2142	1884	1660
WIND DRIFT (ins.)	0	.8"	3.6"	8.6"	16.2"	27.0"	42.5"
VELOCITY (fps)	3300	2960	2639	2341	2067	1816	1599
WIND DRIFT (ins.)	0	.8"	3.7"	9.0"	17.0"	28.2"	44.4"
VELOCITY (fps)	3200	2865	2550	2259	1992	1748	1540
WIND DRIFT (ins.)	0	.9"	3.9"	9.4"	17.8"	29.5"	45.8"
VELOCITY (fps)	3100	2771	2463	2179	1919	1682	1472
WIND DRIFT (ins.)	0	1.0"	4.1"	9.9"	18.6"	31.0"	48.4"
VELOCITY (fps)	3000	2677	2376	2099	1846	1617	1416
WIND DRIFT (ins.)	0	1.0"	4.3"	10.4"	19.5"	32.6"	50.5"
VELOCITY (fps)	2900	2583	2289	2020	1773	1553	1360
WIND DRIFT (ins.)	0	1.0"	4.6"	10.8"	20.5"	34.2"	53.0"
VELOCITY (fps)	2800	2490	2204	1941	1702	1491	1308
WIND DRIFT (ins.)	0	1.1"	4.8"	11.5"	21.6"	35.9"	55.7"
VELOCITY (fps)	2700	2397	2119	1863	1633	1431	1259
WIND DRIFT (ins.)	0	1.2"	5.0"	12.1"	22.7"	37.7"	58.6"
VELOCITY (fps)	2600	2305	2034	1786	1565	1371	1212
WIND DRIFT (ins.)	0	1.2"	5.3"	12.6"	23.9"	39.6"	61.9"
VELOCITY (fps)	2500	2213	1950	1710	1498	1314	1171
WIND DRIFT (ins.)	0	1.3"	5.6"	13.4"	25.2"	41.6"	64.4"
VELOCITY (fps)	2400	2122	1866	1635	1433	1260	1133
WIND DRIFT (ins.)	0	1.3"	5.9"	14.1"	26.5"	43.9"	67.6"
VELOCITY (fps)	2300	2030	1782	1561	1367	1208	1095
WIND DRIFT (ins.)	0	1.4"	6.2"	14.9"	28.0"	46.0"	70.7"
VELOCITY (fps)	2200	1938	1700	1489	1306	1163	1064
WIND DRIFT (ins.)	0	1.5"	6.5"	15.8"	29.6"	48.5"	74.0"
VELOCITY (fps)	2100	1847	1618	1418	1248	1123	1035
WIND DRIFT (ins.)	0	1.6"	7.0"	16.7"	31.3"	50.7"	76.2"
VELOCITY (fps)	2000	1755	1538	1347	1193	1086	1009
WIND DRIFT (ins.)	0	1.7"	7.4"	17.7"	32.9"	52.7"	78.6"
VELOCITY (fps)	1900	1666	1459	1282	1146	1053	984
WIND DRIFT (ins.)	0	1.8"	8.0"	18.6"	34.5"	54.5"	80.9"
VELOCITY (fps)	1800	1578	1382	1219	1103	1022	961
WIND DRIFT (ins.)	0	1.9"	8.3"	19.6"	36.0"	55.9"	82.7"
VELOCITY (fps)	1700	1490	1307	1164	1065	993	937
WIND DRIFT (ins.)	0	2.0"	8.7"	20.4"	37.0"	57.0"	84.1"
VELOCITY (fps)	1600	1402	1235	1114	1030	966	912
WIND DRIFT (ins.)	0	2.2"	9.4"	21.5"	37.3"	57.1"	83.0"

**BALLISTIC COEFFICIENT: .330**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3179	2875	2587	2318	2070	1849
WIND DRIFT (ins.)	0	.7"	3.1"	7.3"	13.8"	22.8"	35.6"
VELOCITY (fps)	3400	3084	2785	2503	2240	1998	1783
WIND DRIFT (ins.)	0	.8"	3.2"	7.7"	14.5"	23.9"	37.1"
VELOCITY (fps)	3300	2990	2695	2419	2163	1927	1718
WIND DRIFT (ins.)	0	.8"	3.4"	8.1"	15.1"	24.9"	38.8"
VELOCITY (fps)	3200	2895	2606	2336	2086	1856	1654
WIND DRIFT (ins.)	0	.8"	3.5"	8.4"	15.9"	26.1"	40.9"
VELOCITY (fps)	3100	2800	2517	2254	2010	1785	1592
WIND DRIFT (ins.)	0	.9"	3.7"	8.8"	16.6"	27.4"	42.5"
VELOCITY (fps)	3000	2706	2429	2172	1935	1717	1531
WIND DRIFT (ins.)	0	.9"	3.9"	9.3"	17.4"	28.7"	44.4"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2900	2611	2341	2091	1860	1650	1461
WIND DRIFT (ins.)	0	1.0"	4.1"	9.7"	18.3"	30.1"	46.8"
VELOCITY (fps)	2800	2517	2254	2010	1786	1583	1403
WIND DRIFT (ins.)	0	1.0"	4.3"	10.3"	19.1"	31.8"	49.0"
VELOCITY (fps)	2700	2424	2167	1931	1713	1519	1346
WIND DRIFT (ins.)	0	1.0"	4.6"	10.7"	20.2"	33.4"	51.8"
VELOCITY (fps)	2600	2331	2082	1851	1642	1456	1293
WIND DRIFT (ins.)	0	1.1"	4.7"	11.4"	21.3"	35.1"	54.2"
VELOCITY (fps)	2500	2238	1996	1773	1572	1394	1242
WIND DRIFT (ins.)	0	1.2"	5.0"	11.8"	22.4"	36.9"	57.7"
VELOCITY (fps)	2400	2146	1911	1695	1503	1333	1196
WIND DRIFT (ins.)	0	1.2"	5.2"	12.6"	23.7"	38.9"	60.0"
VELOCITY (fps)	2300	2053	1825	1619	1435	1276	1154
WIND DRIFT (ins.)	0	1.3"	5.7"	13.3"	25.1"	41.1"	63.5"
VELOCITY (fps)	2200	1961	1741	1543	1368	1221	1112
WIND DRIFT (ins.)	0	1.4"	5.9"	14.2"	26.4"	43.1"	66.0"
VELOCITY (fps)	2100	1869	1657	1470	1305	1173	1078
WIND DRIFT (ins.)	0	1.4"	6.4"	14.9"	27.8"	45.5"	68.9"
VELOCITY (fps)	2000	1777	1575	1397	1245	1130	1047
WIND DRIFT (ins.)	0	1.5"	6.7"	15.8"	29.3"	47.5"	71.9"
VELOCITY (fps)	1900	1686	1495	1326	1189	1091	1018
WIND DRIFT (ins.)	0	1.6"	7.1"	16.8"	31.0"	49.5"	74.4"
VELOCITY (fps)	1800	1596	1415	1260	1141	1056	992
WIND DRIFT (ins.)	0	1.8"	7.6"	17.7"	32.2"	51.0"	75.8"
VELOCITY (fps)	1700	1508	1337	1197	1097	1023	967
WIND DRIFT (ins.)	0	1.8"	7.9"	18.7"	33.5"	52.3"	76.7"
VELOCITY (fps)	1600	1419	1263	1143	1057	993	942
WIND DRIFT (ins.)	0	2.0"	8.3"	19.2"	34.5"	52.7"	77.1"

## BALLISTIC COEFFICIENT: .380

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3205	2924	2657	2405	2171	1960
WIND DRIFT (ins.)	0	.7"	2.8"	6.7"	12.5"	20.4"	31.4"
VELOCITY (fps)	3400	3110	2834	2571	2325	2096	1891
WIND DRIFT (ins.)	0	.7"	2.9"	7.0"	13.0"	21.4"	33.0"
VELOCITY (fps)	3300	3015	2743	2486	2246	2022	1823
WIND DRIFT (ins.)	0	.7"	3.1"	7.3"	13.6"	22.4"	34.7"
VELOCITY (fps)	3200	2920	2653	2401	2167	1949	1755
WIND DRIFT (ins.)	0	.7"	3.2"	7.7"	14.3"	23.5"	36.0"
VELOCITY (fps)	3100	2825	2563	2317	2089	1877	1689
WIND DRIFT (ins.)	0	.7"	3.3"	8.0"	14.9"	24.5"	38.4"
VELOCITY (fps)	3000	2730	2473	2234	2011	1805	1624
WIND DRIFT (ins.)	0	.8"	3.6"	8.4"	15.7"	25.7"	40.4"
VELOCITY (fps)	2900	2635	2384	2151	1935	1734	1561
WIND DRIFT (ins.)	0	.8"	3.8"	8.8"	16.4"	27.0"	41.7"
VELOCITY (fps)	2800	2540	2296	2069	1858	1665	1489
WIND DRIFT (ins.)	0	.9"	3.9"	9.3"	17.3"	28.4"	44.0"
VELOCITY (fps)	2700	2446	2209	1988	1783	1597	1429
WIND DRIFT (ins.)	0	.9"	4.1"	9.7"	18.1"	29.8"	46.2"
VELOCITY (fps)	2600	2353	2122	1907	1709	1530	1369
WIND DRIFT (ins.)	0	1.0"	4.3"	10.2"	19.1"	31.6"	48.8"
VELOCITY (fps)	2500	2259	2035	1827	1636	1465	1313
WIND DRIFT (ins.)	0	1.1"	4.5"	10.7"	20.2"	33.2"	51.0"
VELOCITY (fps)	2400	2166	1948	1747	1564	1401	1259
WIND DRIFT (ins.)	0	1.1"	4.8"	11.3"	21.4"	34.9"	54.3"
VELOCITY (fps)	2300	2073	1862	1668	1494	1338	1209
WIND DRIFT (ins.)	0	1.2"	5.1"	12.0"	22.5"	36.9"	57.1"
VELOCITY (fps)	2200	1980	1776	1590	1424	1279	1164
WIND DRIFT (ins.)	0	1.3"	5.3"	12.8"	23.9"	38.8"	60.3"
VELOCITY (fps)	2100	1887	1691	1514	1356	1222	1124
WIND DRIFT (ins.)	0	1.4"	5.7"	13.6"	25.2"	41.1"	63.4"
VELOCITY (fps)	2000	1794	1607	1439	1291	1172	1084
WIND DRIFT (ins.)	0	1.4"	6.1"	14.4"	26.7"	43.3"	65.9"
VELOCITY (fps)	1900	1703	1525	1365	1230	1128	1051
WIND DRIFT (ins.)	0	1.4"	6.4"	15.3"	28.2"	44.9"	68.4"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	1800	1613	1444	1295	1175	1088	1021
WIND DRIFT (ins.)	0	1.5"	6.8"	16.2"	29.7"	46.7"	70.4"
VELOCITY (fps)	1700	1523	1364	1228	1126	1051	993
WIND DRIFT (ins.)	0	1.6"	7.0"	16.9"	30.7"	47.9"	71.1"
VELOCITY (fps)	1600	1433	1286	1169	1083	1017	966
WIND DRIFT (ins.)	0	1.8"	7.7"	17.5"	31.5"	49.1"	72.6"

**BALLISTIC COEFFICIENT: .400**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3234	2979	2736	2504	2286	2089
WIND DRIFT (ins.)	0	.6"	2.5"	5.9"	11.0"	17.9"	27.9"
VELOCITY (fps)	3400	3138	2888	2648	2421	2208	2016
WIND DRIFT (ins.)	0	.6"	2.6"	6.2"	11.5"	18.8"	28.8"
VELOCITY (fps)	3300	3043	2796	2561	2340	2132	1945
WIND DRIFT (ins.)	0	.6"	2.7"	6.5"	12.0"	19.6"	30.7"
VELOCITY (fps)	3200	2947	2705	2475	2259	2056	1874
WIND DRIFT (ins.)	0	.7"	2.8"	6.7"	12.5"	20.5"	32.0"
VELOCITY (fps)	3100	2851	2614	2389	2178	1980	1803
WIND DRIFT (ins.)	0	.7"	3.0"	7.1"	13.2"	21.6"	33.5"
VELOCITY (fps)	3000	2756	2523	2304	2098	1906	1734
WIND DRIFT (ins.)	0	.7"	3.1"	7.4"	13.9"	22.6"	35.3"
VELOCITY (fps)	2900	2661	2433	2219	2019	1832	1666
WIND DRIFT (ins.)	0	.7"	3.3"	7.8"	14.5"	23.7"	36.6"
VELOCITY (fps)	2800	2565	2343	2135	1940	1758	1600
WIND DRIFT (ins.)	0	.8"	3.5"	8.2"	15.3"	25.0"	38.2"
VELOCITY (fps)	2700	2471	2255	2052	1863	1687	1535
WIND DRIFT (ins.)	0	.8"	3.6"	8.6"	16.0"	26.3"	40.3"
VELOCITY (fps)	2600	2377	2166	1969	1785	1617	1462
WIND DRIFT (ins.)	0	.8"	3.9"	9.1"	16.9"	27.6"	42.8"
VELOCITY (fps)	2500	2283	2078	1887	1709	1548	1400
WIND DRIFT (ins.)	0	.9"	4.1"	9.6"	17.9"	29.1"	45.3"
VELOCITY (fps)	2400	2189	1991	1805	1634	1480	1339
WIND DRIFT (ins.)	0	1.0"	4.2"	10.1"	18.9"	30.7"	47.6"
VELOCITY (fps)	2300	2095	1903	1724	1561	1413	1282
WIND DRIFT (ins.)	0	1.0"	4.5"	10.6"	19.8"	32.5"	50.5"
VELOCITY (fps)	2200	2001	1815	1644	1488	1348	1228
WIND DRIFT (ins.)	0	1.2"	4.8"	11.3"	21.1"	34.2"	52.7"
VELOCITY (fps)	2100	1908	1728	1565	1417	1286	1179
WIND DRIFT (ins.)	0	1.1"	5.1"	12.0"	22.3"	36.1"	56.1"
VELOCITY (fps)	2000	1814	1643	1487	1347	1227	1136
WIND DRIFT (ins.)	0	1.3"	5.4"	12.9"	23.6"	38.1"	58.6"
VELOCITY (fps)	1900	1722	1559	1411	1281	1174	1093
WIND DRIFT (ins.)	0	1.2"	5.7"	13.6"	25.0"	40.5"	60.6"
VELOCITY (fps)	1800	1630	1476	1337	1219	1128	1058
WIND DRIFT (ins.)	0	1.5"	6.1"	14.2"	26.1"	41.7"	62.8"

**BALLISTIC COEFFICIENT: .440**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3500	3258	3024	2801	2586	2383	2198
WIND DRIFT (ins.)	0	.5"	2.3"	5.3"	9.8"	15.9"	24.7"
VELOCITY (fps)	3400	3162	2932	2712	2502	2303	2123
WIND DRIFT (ins.)	0	.5"	2.4"	5.5"	10.3"	16.7"	25.9"
VELOCITY (fps)	3300	3066	2840	2624	2418	2224	2049
WIND DRIFT (ins.)	0	.5"	2.4"	5.8"	10.8"	17.5"	27.2"
VELOCITY (fps)	3200	2969	2748	2536	2335	2146	1975
WIND DRIFT (ins.)	0	.6"	2.6"	6.0"	11.3"	18.3"	28.7"
VELOCITY (fps)	3100	2874	2656	2449	2253	2068	1902
WIND DRIFT (ins.)	0	.6"	2.7"	6.3"	11.8"	19.2"	29.6"
VELOCITY (fps)	3000	2778	2564	2362	2171	1991	1830
WIND DRIFT (ins.)	0	.6"	2.8"	6.7"	12.4"	20.2"	31.5"
VELOCITY (fps)	2900	2682	2473	2276	2090	1915	1758
WIND DRIFT (ins.)	0	.7"	3.0"	7.0"	13.0"	21.2"	32.9"
VELOCITY (fps)	2800	2586	2383	2190	2009	1839	1688
WIND DRIFT (ins.)	0	.7"	3.1"	7.4"	13.7"	22.3"	34.6"
VELOCITY (fps)	2700	2491	2293	2106	1930	1764	1620
WIND DRIFT (ins.)	0	.7"	3.2"	7.7"	14.3"	23.5"	36.8"



RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2600	2396	2203	2022	1851	1691	1553
WIND DRIFT (ins.)	0	.8"	3.5"	8.1"	15.1"	24.6"	38.3"
VELOCITY (fps)	2500	2302	2114	1938	1772	1619	1477
WIND DRIFT (ins.)	0	.8"	3.7"	8.6"	15.9"	25.9"	40.2"
VELOCITY (fps)	2400	2207	2025	1854	1694	1548	1412
WIND DRIFT (ins.)	0	.9"	3.9"	9.1"	16.9"	27.4"	42.6"
VELOCITY (fps)	2300	2113	1937	1771	1618	1478	1349
WIND DRIFT (ins.)	0	.9"	4.0"	9.5"	17.8"	29.0"	44.9"
VELOCITY (fps)	2200	2019	1848	1689	1543	1409	1289
WIND DRIFT (ins.)	0	1.0"	4.3"	10.1"	18.8"	30.7"	47.6"
VELOCITY (fps)	2100	1925	1760	1608	1469	1342	1233
WIND DRIFT (ins.)	0	1.0"	4.5"	10.7"	19.9"	32.4"	49.7"
VELOCITY (fps)	2000	1831	1673	1528	1396	1279	1182
WIND DRIFT (ins.)	0	1.1"	4.8"	11.5"	21.2"	34.1"	53.2"
VELOCITY (fps)	1900	1737	1587	1450	1325	1219	1137
WIND DRIFT (ins.)	0	1.2"	5.2"	12.1"	22.5"	36.0"	56.0"
VELOCITY (fps)	1800	1645	1503	1373	1259	1165	1092
WIND DRIFT (ins.)	0	1.2"	5.4"	12.8"	23.7"	38.1"	57.5"

#### BALLISTIC COEFFICIENT: .480

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3300	3085	2877	2677	2485	2303	2138
WIND DRIFT (ins.)	0	.5"	2.2"	5.2"	9.7"	15.8"	24.4"
VELOCITY (fps)	3200	2988	2784	2588	2401	2223	2062
WIND DRIFT (ins.)	0	.6"	2.3"	5.4"	10.1"	16.5"	25.4"
VELOCITY (fps)	3100	2892	2691	2499	2317	2143	1987
WIND DRIFT (ins.)	0	.6"	2.5"	5.8"	10.6"	17.4"	26.6"
VELOCITY (fps)	3000	2796	2599	2411	2233	2064	1912
WIND DRIFT (ins.)	0	.6"	2.5"	6.1"	11.2"	18.2"	28.0"
VELOCITY (fps)	2900	2700	2507	2324	2150	1986	1838
WIND DRIFT (ins.)	0	.6"	2.7"	6.3"	11.8"	19.1"	29.7"
VELOCITY (fps)	2800	2603	2416	2237	2068	1909	1765
WIND DRIFT (ins.)	0	.7"	2.8"	6.7"	12.4"	20.0"	30.6"
VELOCITY (fps)	2700	2508	2325	2151	1987	1832	1694
WIND DRIFT (ins.)	0	.7"	2.9"	7.1"	13.0"	21.0"	32.9"
VELOCITY (fps)	2600	2413	2235	2066	1906	1755	1624
WIND DRIFT (ins.)	0	.7"	3.1"	7.4"	13.7"	22.3"	34.7"
VELOCITY (fps)	2500	2318	2145	1981	1826	1681	1555
WIND DRIFT (ins.)	0	.7"	3.3"	7.7"	14.4"	23.3"	36.9"
VELOCITY (fps)	2400	2223	2055	1896	1746	1607	1477
WIND DRIFT (ins.)	0	.8"	3.5"	8.2"	15.2"	24.7"	38.3"
VELOCITY (fps)	2300	2128	1965	1811	1667	1534	1411
WIND DRIFT (ins.)	0	.9"	3.7"	8.7"	16.1"	26.3"	40.1"
VELOCITY (fps)	2200	2034	1876	1727	1590	1463	1346
WIND DRIFT (ins.)	0	.8"	3.8"	9.2"	17.0"	27.7"	42.5"
VELOCITY (fps)	2100	1939	1786	1644	1513	1393	1284
WIND DRIFT (ins.)	0	.9"	4.2"	9.8"	18.2"	29.2"	45.5"
VELOCITY (fps)	2000	1844	1698	1563	1438	1325	1227
WIND DRIFT (ins.)	0	1.1"	4.4"	10.4"	19.3"	31.0"	48.1"

#### BALLISTIC COEFFICIENT: .520

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3200	3004	2815	2632	2457	2290	2138
WIND DRIFT (ins.)	0	.5"	2.1"	5.0"	9.3"	15.0"	23.3"
VELOCITY (fps)	3100	2908	2722	2542	2371	2209	2061
WIND DRIFT (ins.)	0	.5"	2.2"	5.3"	9.8"	15.7"	24.1"
VELOCITY (fps)	3000	2811	2629	2453	2287	2128	1984
WIND DRIFT (ins.)	0	.5"	2.3"	5.6"	10.2"	16.5"	25.9"
VELOCITY (fps)	2900	2715	2536	2365	2203	2048	1908
WIND DRIFT (ins.)	0	.5"	2.4"	5.8"	10.7"	17.4"	27.0"
VELOCITY (fps)	2800	2618	2444	2277	2119	1969	1833
WIND DRIFT (ins.)	0	.6"	2.6"	6.2"	11.3"	18.2"	28.4"
VELOCITY (fps)	2700	2522	2352	2190	2036	1890	1759
WIND DRIFT (ins.)	0	.6"	2.7"	6.5"	11.9"	19.2"	30.0"
VELOCITY (fps)	2600	2427	2261	2104	1954	1812	1686
WIND DRIFT (ins.)	0	.6"	2.9"	6.7"	12.5"	20.2"	31.0"

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	2500	2331	2171	2018	1872	1735	1614
WIND DRIFT (ins.)	0	.7"	3.0"	7.0"	13.2"	21.2"	33.6"
VELOCITY (fps)	2400	2236	2080	1931	1790	1659	1544
WIND DRIFT (ins.)	0	.8"	3.2"	7.6"	14.0"	22.4"	35.4"
VELOCITY (fps)	2300	2141	1990	1846	1710	1584	1465
WIND DRIFT (ins.)	0	.8"	3.3"	7.9"	14.7"	23.8"	37.1"
VELOCITY (fps)	2200	2046	1899	1760	1630	1510	1397
WIND DRIFT (ins.)	0	.8"	3.6"	8.4"	15.7"	25.3"	39.2"
VELOCITY (fps)	2100	1951	1809	1676	1552	1438	1331
WIND DRIFT (ins.)	0	.8"	3.8"	8.9"	16.6"	26.6"	41.2"
VELOCITY (fps)	2000	1856	1720	1593	1475	1366	1269
WIND DRIFT (ins.)	0	.9"	3.9"	9.5"	17.7"	28.5"	44.0"

**BALLISTIC COEFFICIENT: .560**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.	600 yds.
VELOCITY (fps)	3100	2921	2748	2580	2419	2265	2126
WIND DRIFT (ins.)	0	.5"	2.0"	4.8"	9.0"	14.5"	22.0"
VELOCITY (fps)	3000	2824	2654	2490	2333	2183	2047
WIND DRIFT (ins.)	0	.5"	2.2"	5.1"	9.4"	15.2"	23.5"
VELOCITY (fps)	2900	2728	2561	2401	2248	2102	1970
WIND DRIFT (ins.)	0	.5"	2.2"	5.3"	9.8"	15.9"	25.1"
VELOCITY (fps)	2800	2631	2468	2312	2163	2021	1893
WIND DRIFT (ins.)	0	.5"	2.4"	5.6"	10.4"	16.8"	26.0"
VELOCITY (fps)	2700	2535	2376	2224	2079	1941	1817
WIND DRIFT (ins.)	0	.5"	2.5"	5.9"	10.9"	17.6"	27.1"
VELOCITY (fps)	2600	2439	2284	2137	1996	1861	1741
WIND DRIFT (ins.)	0	.6"	2.7"	6.2"	11.4"	18.7"	28.5"
VELOCITY (fps)	2500	2343	2193	2049	1913	1782	1667
WIND DRIFT (ins.)	0	.6"	2.8"	6.6"	12.0"	19.6"	30.4"
VELOCITY (fps)	2400	2248	2102	1962	1830	1704	1595
WIND DRIFT (ins.)	0	.6"	2.9"	7.0"	12.7"	20.7"	32.8"
VELOCITY (fps)	2300	2152	2011	1876	1747	1627	1513
WIND DRIFT (ins.)	0	.7"	3.0"	7.2"	13.6"	22.5"	33.5"
VELOCITY (fps)	2200	2057	1920	1789	1666	1552	1443
WIND DRIFT (ins.)	0	.7"	3.2"	7.7"	14.4"	23.1"	35.5"
VELOCITY (fps)	2100	1961	1829	1703	1586	1477	1374
WIND DRIFT (ins.)	0	.8"	3.4"	8.3"	15.3"	24.7"	38.1"
VELOCITY (fps)	2000	1866	1738	1619	1508	1404	1308
WIND DRIFT (ins.)	0	.8"	3.8"	8.8"	16.1"	26.1"	40.0"

**BALLISTIC COEFFICIENT: .505**

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3200	2805	2617	2268	2105	1544
WIND DRIFT (ins.)	0	2.2"	5.2"	15.5"	23.2"	74.4"
VELOCITY (fps)	3100	2712	2528	2187	2029	1486
WIND DRIFT (ins.)	0	2.3"	5.4"	16.3"	24.2"	78.0"
VELOCITY (fps)	3000	2619	2439	2107	1953	1429
WIND DRIFT (ins.)	0	2.4"	5.7"	17.1"	25.5"	81.8"
VELOCITY (fps)	2900	2526	2351	2027	1877	1368
WIND DRIFT (ins.)	0	2.5"	6.0"	18.0"	26.8"	84.7"
VELOCITY (fps)	2800	2435	2264	1949	1803	1315
WIND DRIFT (ins.)	0	2.6"	6.3"	18.8"	28.1"	88.9"
VELOCITY (fps)	2700	2343	2177	1871	1729	1266
WIND DRIFT (ins.)	0	2.8"	6.6"	19.8"	29.7"	93.8"
VELOCITY (fps)	2600	2253	2091	1793	1657	1218
WIND DRIFT (ins.)	0	2.9"	7.0"	20.7"	31.0"	98.8"
VELOCITY (fps)	2500	2162	2005	1717	1587	1176
WIND DRIFT (ins.)	0	3.1"	7.4"	21.9"	32.7"	103.7"
VELOCITY (fps)	2400	2072	1920	1642	1517	1137
WIND DRIFT (ins.)	0	3.3"	7.7"	23.1"	34.7"	109.0"
VELOCITY (fps)	2300	1982	1834	1568	1449	1102
WIND DRIFT (ins.)	0	3.4"	8.2"	24.5"	36.6"	114.1"
VELOCITY (fps)	2200	1892	1749	1495	1382	1070
WIND DRIFT (ins.)	0	3.6"	8.7"	26.0"	38.5"	118.6"

**BALLISTIC COEFFICIENT: .552**

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3100	2744	2574	2256	2108	1588
WIND DRIFT (ins.)	0	2.1"	4.9"	14.7"	21.8"	69.1"
VELOCITY (fps)	3000	2650	2484	2175	2030	1527
WIND DRIFT (ins.)	0	2.2"	5.2"	15.3"	22.9"	72.6"
VELOCITY (fps)	2900	2557	2395	2093	1952	1467
WIND DRIFT (ins.)	0	2.2"	5.3"	16.2"	24.1"	76.2"
VELOCITY (fps)	2800	2464	2306	2013	1876	1409
WIND DRIFT (ins.)	0	2.4"	5.7"	17.0"	25.3"	79.9"
VELOCITY (fps)	2700	2372	2219	1933	1800	1347
WIND DRIFT (ins.)	0	2.6"	5.9"	17.9"	26.6"	82.8"
VELOCITY (fps)	2600	2281	2131	1854	1725	1295
WIND DRIFT (ins.)	0	2.7"	6.4"	18.8"	28.0"	87.5"
VELOCITY (fps)	2500	2190	2044	1775	1651	1244
WIND DRIFT (ins.)	0	2.8"	6.7"	19.7"	29.5"	92.7"
VELOCITY (fps)	2400	2099	1957	1697	1579	1197
WIND DRIFT (ins.)	0	2.9"	7.1"	21.0"	31.2"	97.1"
VELOCITY (fps)	2300	2008	1871	1621	1508	1154
WIND DRIFT (ins.)	0	3.1"	7.4"	22.1"	32.9"	102.4"
VELOCITY (fps)	2200	1917	1784	1546	1438	1116
WIND DRIFT (ins.)	0	3.3"	7.9"	23.3"	34.8"	107.3"

**BALLISTIC COEFFICIENT: .580**

RANGE	MUZZLE	200 yds.	300 yds.	500 yds.	600 yds.	1000 yds.
VELOCITY (fps)	3000	2655	2491	2185	2042	1543
WIND DRIFT (ins.)	0	2.2"	5.1"	15.2"	22.5"	71.1"
VELOCITY (fps)	2900	2561	2401	2104	1964	1482
WIND DRIFT (ins.)	0	2.3"	5.4"	15.8"	23.6"	74.8"
VELOCITY (fps)	2800	2469	2313	2023	1887	1423
WIND DRIFT (ins.)	0	2.3"	5.6"	16.7"	24.9"	78.6"
VELOCITY (fps)	2700	2377	2225	1943	1811	1361
WIND DRIFT (ins.)	0	2.5"	5.9"	17.5"	26.1"	81.1"
VELOCITY (fps)	2600	2285	2138	1863	1736	1307
WIND DRIFT (ins.)	0	2.7"	6.1"	18.5"	27.5"	86.0"
VELOCITY (fps)	2500	2194	2050	1784	1661	1256
WIND DRIFT (ins.)	0	2.7"	6.6"	19.3"	29.0"	90.6"
VELOCITY (fps)	2400	2103	1963	1706	1589	1207
WIND DRIFT (ins.)	0	2.9"	7.0"	20.5"	30.6"	95.5"
VELOCITY (fps)	2300	2012	1877	1629	1517	1163
WIND DRIFT (ins.)	0	3.0"	7.2"	21.8"	32.5"	100.6"
VELOCITY (fps)	2200	1921	1790	1553	1447	1124
WIND DRIFT (ins.)	0	3.2"	7.7"	23.2"	34.1"	105.3"



## UPHILL/DOWNHILL TABLES

## INTRODUCTION

It is common knowledge among the shooting fraternity that shooting at angles greater than  $10^\circ$  uphill or downhill affects the trajectory of the bullet. In both cases the bullet will shoot high, but how high? The following tables have been constructed in such a manner, that correction factors apply directly to the trajectories listed in the trajectory tables.

To understand the use of the tables, we will take an excerpt from the Trajectory Tables and show the simple step by step procedure necessary to find the added amount a shooter must apply to correct for a change in angle of elevation in a practical hunting situation. Our hunter is using a Hornady 180 grain SP from a 300 Winchester Magnum at 3000 fps, and is firing at an angle of  $30^\circ$  with the target at a range of 200 yards. His rifle is zeroed at 300 yards.

30 CALIBER (.308" DIAMETER) 180 GRAIN SPIRE POINT

**SECTIONAL DENSITY: .271 BALLISTIC COEFFICIENT: .431**

RANGE	MUZZLE	100 yds.	200 yds.	300 yds.	400 yds.	500 yds.
VELOCITY (fps)	3000	2774	2558	2353	2161	1979
ENERGY (ft. lbs.)	3598	3076	2616	2214	1867	1566
TRAJECTORY: 100 yd. zero	-1.5"	0.0	-3.1"	-11.6"	-26.6"	-49.9"
TRAJECTORY: 200 yd. zero	-1.5"	1.6"	0.0	-6.9"	-20.3"	-41.5"
TRAJECTORY: 300 yd. zero	-1.5"	3.9"	4.6"	0.0	-11.0"	-29.9"
TRAJECTORY: 400 yd. zero	-1.5"	6.7"	10.2"	8.3"	0.0	-16.1"
TRAJECTORY: 500 yd. zero	-1.5"	9.9"	16.6"	18.0"	12.9"	0.0

Step 1.) Always begin by finding the 300 yard trajectory for the 500 yard zero, regardless of the range for which you are zeroed. (If the range is in 50 yard increments, use the 150 yard trajectory with the 250 yard zero.) In this case the trajectory is 18.0".

Step 2.) Find that number (18.0" or the closest number to it) in the second column of the Uphill/Downhill Tables (make sure it is in the section with the correct angle for your situation,  $30^\circ$  in this case).

Step 3.) Now read across to the appropriate column indicating the range for the desired correction. For this situation 200 yards is the desired range and 1.0" is the amount of correction.

Step 4.) Now refer back to the trajectory for which you are zeroed. Our shooter is zeroed at 300 yards and has a 200 yard trajectory of +4.6".

Step 5.) To this figure (4.6") add the correction (1.0"), which yields 5.6". This new figure is the new trajectory at 200 yards with a 300 yard zero while shooting at an angle of  $30^\circ$ . Thus, if zeroed at 300 yards, this shooter should hold 5.6" low to hit dead on.

As is readily noticeable the amount of correction necessary for the hunter was a rather small amount, but as the angle increases, so does the amount of correction. The really large correction factors occur with bullets that are traveling at relatively slow velocities over long ranges.

# ANGLE OF FIRE: 15°

150/300 yd. Trajectory for 250/500 yd. zero range	Correction 50/100 yd.	Correction 100/200 yd.	Correction 150/300 yd.	Correction 200/400 yd.	Correction 250/500	Correction 300/600 yd.
5°	0	.1"	.2"	.4"	.6"	1.0"
10°	0	.1"	.4"	.7"	1.2"	1.9"
15°	0	.2"	.5"	1.1"	1.8"	2.7"
20°	.1"	.3"	.7"	1.4"	2.4"	3.6"
25°	.1"	.3"	.9"	1.8"	2.9"	4.5"
30°	.1"	.4"	1.1"	2.1"	3.5"	5.4"
40°	.1"	.6"	1.4"	2.8"	4.7"	7.7"
50°	.1"	.7"	1.8"	3.5"	5.8"	8.9"
70°	.2"	1.0"	2.5"	4.8"	8.1"	12.4"

# ANGLE OF FIRE: 30°

150/300 yd. Trajectory for 250/500 yd. zero range	Correction 50/100 yd.	Correction 100/200 yd.	Correction 150/300 yd.	Correction 200/400 yd.	Correction 250/500	Correction 300/600 yd.
2°	0	.1"	.4"	.7"	1.2"	1.8"
4°	0	.2"	.6"	1.2"	2.1"	3.2"
6°	.1"	.4"	.9"	1.8"	3.0"	4.6"
8°	.1"	.5"	1.2"	2.3"	3.9"	6.0"
10°	.1"	.6"	1.5"	2.9"	4.8"	7.3"
12°	.1"	.7"	1.7"	3.4"	5.7"	8.7"
14°	.2"	.8"	2.0"	3.9"	6.6"	10.1"
16°	.2"	.9"	2.3"	4.5"	7.5"	11.5"
18°	.2"	1.0"	2.6"	5.0"	8.4"	12.9"
20°	.2"	1.1"	2.8"	5.5"	9.3"	14.3"
25°	.3"	1.4"	3.5"	6.9"	11.6"	17.7"
30°	.3"	1.6"	4.2"	8.2"	13.9"	21.2"
35°	.4"	1.9"	4.9"	9.8"	16.1"	24.7"
40°	.4"	2.2"	5.6"	10.9"	18.4"	28.1"
50°	.5"	2.7"	7.0"	13.6"	22.9"	35.0"
60°	.6"	3.2"	8.3"	16.3"	27.4"	42.0"
70°	.8"	3.8"	9.7"	19.0"	32.0"	48.9"

# ANGLE OF FIRE: 45°

150/300 yd. Trajectory for 250/500 yd. zero range	Correction 50/100 yd.	Correction 100/200 yd.	Correction 150/300 yd.	Correction 200/400 yd.	Correction 250/500	Correction 300/600 yd.
2°	.1"	.3"	.8"	1.5"	2.6"	3.9"
3°	.1"	.4"	1.1"	2.1"	3.6"	5.5"
4°	.1"	.5"	1.4"	2.7"	4.6"	7.0"
5°	.1"	.7"	1.7"	3.3"	5.5"	8.5"
6°	.2"	.8"	2.0"	3.9"	6.5"	10.0"
7°	.2"	.9"	2.3"	4.5"	7.5"	11.5"
8°	.2"	1.0"	2.6"	5.1"	8.5"	13.0"
9°	.2"	1.1"	2.9"	5.7"	9.5"	14.5"
10°	.2"	1.2"	3.2"	6.2"	10.5"	16.1"
11°	.3"	1.4"	3.5"	6.8"	11.5"	17.6"
12°	.3"	1.5"	3.8"	7.4"	12.5"	19.1"
13°	.3"	1.6"	4.1"	8.0"	13.5"	20.6"
14°	.3"	1.7"	4.4"	8.6"	14.5"	22.1"
15°	.4"	1.8"	4.7"	9.2"	15.4"	23.6"
16°	.4"	1.9"	5.0"	9.8"	16.4"	25.1"
17°	.4"	2.1"	5.3"	10.4"	17.4"	26.6"
18°	.4"	2.2"	5.6"	10.9"	18.4"	28.2"
19°	.5"	2.3"	5.9"	11.5"	19.4"	29.7"
20°	.5"	2.4"	6.2"	12.1"	20.4"	31.2"
22°	.5"	2.6"	6.8"	13.3"	22.4"	34.2"
24°	.6"	2.9"	7.4"	14.5"	24.4"	37.2"
26°	.6"	3.1"	8.0"	15.7"	26.3"	40.3"
28°	.7"	3.3"	8.6"	16.8"	28.3"	43.3"
30°	.7"	3.6"	9.2"	18.0"	30.3"	46.3"
35°	.8"	4.2"	10.7"	21.0"	35.2"	53.9"
40°	.9"	4.8"	12.2"	23.9"	40.2"	61.5"
45°	1.1"	5.3"	13.7"	26.8"	45.1"	69.0"
50°	1.2"	5.9"	15.2"	29.8"	50.1"	76.6"
60°	1.4"	7.1"	18.2"	35.7"	60.0"	91.8"
70°	1.6"	8.3"	21.3"	41.6"	69.9"	106.9"

## NOTES



# *Charts and Conversion Tables*

## BOXER PRIMER CHART

Manufacturer	Small Pistol	Small Pistol Magnum	Small Rifle	Small Rifle Magnum	Large Pistol	Large Pistol Magnum	Large Rifle	Large Rifle Magnum
Federal	100	200	200	205	150		210	215
Remington	1½	5½	6½	7½	2½		9½	9½M
Winchester	1½-108	1½M-108	6½-116		7-111	7M-111F	8½-120	
Alcan	SP		SR		LP		LR	
CCI	500	550	400BR-4	450	300	350	200BR-2	250
RWS	4031		4033		5337		5341	5342
Norma	SP		SR		LP		LR	
CIL	1		1½		2½		8½	

## RELATIVE BURNING RATE CHART FOR PRESENTLY AVAILABLE CANISTER GRADE POWDERS

(The order is from fastest to slowest)

- |                         |                        |                                     |
|-------------------------|------------------------|-------------------------------------|
| 1. Norma R-1            | 19. Winchester 630     | 37. Hodgdon H335                    |
| 2. Hercules Bullseye    | 20. Hercules 2400      | 38. Du Pont IMR 4895                |
| 3. Winchester 231       | 21. Norma R123         | 39. Hodgdon H4895                   |
| 4. Hercules Red Dot     | 22. Hodgdon H110       | 40. Du Pont IMR 4064                |
| 5. Du Pont Hi-Skor 700X | 23. Winchester 296     | 41. Norma 202                       |
| 6. Hercules Green Dot   | 24. Du Pont SR 4759    | 42. Du Pont IMR 4320                |
| 7. Du Pont SR 7625      | 25. Du Pont IMR 4227   | 43. Hodgdon H380                    |
| 8. Hercules Unique      | 26. Hodgdon H4227      | 44. Winchester 760                  |
| 9. Du Pont SR 4756      | 27. Winchester 680     | 45. Hodgdon H414                    |
| 10. Alcan AL-5          | 28. Norma 200          | 46. Hodgdon H205                    |
| 11. Hodgdon HS-5        | 29. Du Pont IMR 4198   | 47. Du Pont IMR 4350                |
| 12. Alcan AL-7          | 30. Hodgdon H4198      | 48. Norma 204                       |
| 13. Hodgdon HS-6        | 31. Hercules Reloder 7 | 49. Du Pont IMR 4831                |
| 14. Winchester 540      | 32. Du Pont IMR 3031   | 50. Hodgdon H450                    |
| 15. Hercules Herco      | 33. Norma 201          | 51. Hodgdon H4831                   |
| 16. Hercules Blue Dot   | 34. Hodgdon H322       | 52. Winchester 785                  |
| 17. Alcan AL-8          | 35. Winchester 748     | 53. Norma Magnum Rifle Powder (MRP) |
| 18. Hodgdon HS-7        | 36. Hodgdon BL-C2      | 54. Hodgdon H870                    |

## SHELL HOLDER CHART

### Rifle Cartridges

Cartridge	Pacific	RCBS	Lyman*	C-H	Bonanza	Redding
17 Mach IV	16	10	26	15	6	10
17/222	16	10	26	15	6	10
17/223	16	10	26	15	6	10
17 Remington	16	10	26	15	6	10
22 Hornet	3	12	4	Hornet	8	14
218 Bee	7	1	10	3	10	3
222 Remington	16	10	26	15	6	10
223 Remington	16	10	26	15	6	10
22 PPC	6 (new)	6	1	12	29	12
222 Remington Magnum	16	10	26	15	6	10
219 Donaldson Wasp	2	2	6	2	4	2
219 Zipper	2	2	6	2	4	2
224 Weatherby Magnum	17	27	3	....	28	....
225 Winchester	4	11	5	4	7	4
22-250 Remington	1	3	2	1	1	1

Cartridge	Pacific	RCBS	Lyman*	C-H	Bonanza	Redding
220 Swift	4	11	5	4	7	4
22 Savage Hi Power (5.6 x 52R)	2	2	6	2	4	2
5.6 x 50mm Magnum	16	10	26	15	6	10
5.6 x 57mm	1	....	....	....	....	....
6 x 47mm	16	10	26	15	6	10
243 Winchester	1	3	2	1	1	1
6mm/224 Remington	1	3	2	1	1	1
6mm/284	1	3	2	1	1	1
240 Weatherby Magnum	1	3	2	1	1	1
25-20	7	1	10	3	....	3
256 Winchester Magnum	6	6	1	12	3	12
25-35	2	2	6	2	....	2
250-3000 Savage	1	3	2	1	1	1
257 Roberts	1	11	2 or 8	4	1	1
257 Roberts Improved	1	11	2 or 8	4	1	1
25-06	1	3	2	1	1	1
257 Weatherby Magnum	5	4	13	6	2	6
6.5mm Japanese	34	15	5	4	4	4
6.5mm Carcano	21	9	28	14	14	1
6.5 x 54mm (Mannlicher Schoenauer)	20	9	28	14	14	24
6.5 x 55mm Swedish Mauser	19	2	27	2	4	1
6.5 x 57mm	1	3	2 or 8	1	1	1
6.5 Remington Magnum	5	4	13	6	2	6
264 Winchester Magnum	5	4**	13	6	2	6
270 Winchester	1	3	2	1	1	1
270 Weatherby Magnum	5	4	13	6	2	6
7mm Mauser (7 x 57)	1	11	2	1	1	1
7 x 64mm	1	3	....	....	....	1
7 x 65mm R	11	26	....	....	....	....
280 Remington/ 7mm Express Remington	1	3	2	1	1	1
284 Winchester	1	3	2	1	1	1
7mm x 61mm Sharpe & Hart	35	....	13	7	....	6
7mm Remington Magnum	5	4**	13	6	2	6
7mm Weatherby Magnum	5	4	13	6	2	6
7.35mm Carcano	21	....	28	14	....	1
7.5 Schmidt-Rubin (7.5 Swiss)	2	2	....	2	....	....
30 M1 Carbine	22	17	19	M1	5	22
30-30 Winchester	2	2	6	2	4	2
300 Savage	1	3	2	1	1	1
308 Winchester	1	3	2	1	1	1
7.62 Russian	23	13	17	....	....	15
30-40 Krag	11	7	7	8B	11	8
30-06	1	3	2	1	1	1
30-06 Improved	1	3	2	1	1	1
300 H & H Magnum	5	4**	13	6	2	6
308 Norma Magnum	5	4	13	6	2	6
300 Winchester Magnum	5	4	13	6	2	6
300 Weatherby Magnum	5	4	13	6	2	6
7.65 Belgian Mauser	24	3	2	1	1	1



Cartridge	Pacific	RCBS	Lyman*	C-H	Bonanza	Redding
303 British	11	7	7	8B	11	8
7.7 Japanese	1	3	2	2	4	1
32 Winchester Special	2	2	6	2	4	2
8mm Mauser (8 x 57s)	1	3	2	1	1	1
8 x 57mm JS	1	3	2	....	....	1
8 x 68mm S	38	....	....	....	....	....
8mm/06	1	3	2	1	1	1
8mm Remington Magnum	5	4	13	6	2	6
8.15 x 46mm	2	....	....	2	....	....
33 Winchester	14	14	17	47	16	18
338 Winchester Magnum	5	4	13	6	2	6
340 Weatherby Magnum	5	4	13	6	2	6
348 Winchester	25	5	18	348	....	20
38 Special	6	6	1	12	3	12
357 Magnum	6	6	1	12	3	12
35 Remington	26	9	8 or 2	14	14	1
358 Winchester	1	3	2	1	1	1
350 Remington Magnum	5	4	13	6	2	6
35 Whelen	1	3	....	1	....	....
358 Norma Magnum	5	4	13	6	2	6
9.3 x 74mm R	13	....	....	6	....	....
375 Winchester	2	2	6	2	4	2
375 H & H Magnum	5	4	13	6	2	6
378 Weatherby Magnum	14	....	17	....	16	....
44 Remington Magnum	30	18	7	8	9	19
444 Marlin	27	28	14B	8B	27	19
45-70 Government	14	14	17	47	16	18
458 Winchester Magnum	5	4	13	6	2	6
460 Weatherby Magnum	14	....	17	....	....	....

## SHELL HOLDER CHART

### Pistol Cartridges

Cartridge	Pacific	RCBS	Lyman*	C-H	Bonanza	Redding
22 Jet	6	6	1	12	3	12
221 Fireball	16	10	26	15	6	10
25 ACP	37	29	....	....	....	....
256 Winchester Magnum	6	6	1	12	3	12
7 x 45 Ingram	16	10	26	15	6	10
7mm BR	1	3	2	1	1	1
30 M1 Carbine	22	17	19	30 M1	5	22
380 Automatic	16	10	26	15	6	10
9mm Luger	8	16	12	Lug.	18	13
38 ACP (Super Auto)	8	1	12	3	10	5
38 Special	6	6	1	12	3	12
357 Magnum	6	6	1	12	3	12
30 Herrett	2	2	6	2	4	2
357 Bain & Davis	30	18	7	8	9	19
357 Herrett	2	2	6	2	4	2

Cartridge	Pacific	RCBS	Lyman*	C-H	Bonanza	Redding
41 Magnum	29	30	30	41 Mag	4	21
44 Special	30	18	7	8	9	19
44 Auto Mag	1	3	2	1	1	1
44 Remington Magnum	30	18	7	8	9	19
45 ACP	1	3	2	1	1	1
45 Auto Rim	31	8	14A	....	....	17
45 Colt	32	20	11	45 LC	21	23
45 Win. Mag.	1	3	2	1	1	1

\*Lyman Tru-Line Junior Shell holders are suffixed by J. Lyman All-American and Spartan shell holders are suffixed by X.

\*\*Some SAKO and Norma cases may require a No. 26 shell holder.

## LOADS PER POUND OF POWDER

GRAINS OF POWDER	NUMBER OF LOADS
5 Grains .....	1400
10 Grains .....	700
15 Grains .....	466
20 Grains .....	350
25 Grains .....	280
30 Grains .....	233
35 Grains .....	200
40 Grains .....	175
45 Grains .....	155
50 Grains .....	140
55 Grains .....	127
60 Grains .....	116
65 Grains .....	107
70 Grains .....	100
75 Grains .....	93
80 Grains .....	87
85 Grains .....	82
90 Grains .....	77
95 Grains .....	73
100 Grains .....	70

# CONVERSION TABLES

## WEIGHT AND LENGTH EQUIVALENTS

7000 Grains	=	1 Pound
437.5 Grains	=	1 Ounce
15.43 Grains	=	1 Gram
453.6 Grams	=	1 Pound
25.4 Millimeters	=	1 Inch

## CONVERSION FACTORS

Pounds x 7000	=	Grains
Ounces x 437.5	=	Grains
Grains x .00229	=	Ounces
Grams x 15.4324	=	Grains
Grains x .0648	=	Grams
Inches x 25.4	=	Millimeters
Millimeters x .03937	=	Inches

**PACIFIC PISTOL POWDER BUSHING CHART**

Stock No.	Bushing Size No.	Dupont 700X	Dupont 4227	Dupont SR7625	Dupont SR4756	Dupont PB	Hercules Bullseye	Hercules 2400	Hercules Red Dot	Hercules Unique	Hercules Herco	Hercules Blue Dot	Hodgdon HP38	Hodgdon Trap 100	Hodgdon HS-5	Hodgdon HS-6	Hodgdon HS-7	Hodgdon H-110	Hodgdon H-4227	Norma R1	Norma R123	Winchester 231	Winchester 296	Winchester 630	Winchester 680
290006	1	2.0	NR	NR	NR	NR	2.6	NR	NR	NR	NR	NR	3.0	2.3	4.1	3.9	4.0	4.2	3.6	1.9	NR	3.0	NR	4.0	NR
290007	2	2.1	NR	NR	NR	NR	2.8	NR	NR	NR	NR	NR	3.2	2.5	4.5	4.2	4.4	4.5	3.9	2.0	NR	3.3	NR	4.2	NR
290008	3	2.3	NR	NR	NR	NR	3.0	NR	NR	NR	NR	NR	3.6	2.8	5.0	4.6	4.8	5.0	4.3	2.3	NR	3.6	NR	4.9	NR
290009	4	2.7	NR	NR	NR	NR	3.4	NR	NR	3.4	NR	NR	4.0	3.1	5.6	5.2	5.5	5.6	4.9	2.6	NR	4.1	NR	5.6	NR
290010	5	2.9	NR	3.1	NR	2.9	3.7	NR	NR	3.6	NR	NR	4.3	3.4	6.1	5.8	6.0	6.1	5.3	2.9	NR	4.5	NR	6.1	NR
290011	6	3.0	NR	3.5	NR	3.1	3.9	NR	NR	3.9	NR	NR	4.5	3.6	6.4	6.0	6.2	6.4	5.5	3.1	NR	4.6	NR	6.3	NR
290012	7	3.2	NR	3.6	NR	3.2	4.1	NR	NR	4.3	3.6	NR	4.8	3.9	6.9	6.3	6.7	6.9	6.0	3.2	NR	4.8	NR	6.5	NR
290013	8	3.5	NR	4.1	NR	3.3	4.4	NR	NR	4.5	3.8	NR	5.0	4.0	7.4	7.0	7.3	7.4	6.5	3.7	NR	5.3	NR	7.2	NR
290014	9	3.7	NR	4.2	3.7	3.4	4.5	NR	NR	4.6	3.9	NR	5.2	4.2	7.7	7.4	7.6	7.7	6.7	3.8	NR	5.5	NR	7.5	NR
290015	10	4.0	7.3	5.0	4.5	4.0	5.1	NR	NR	5.3	4.3	NR	6.1	4.9	8.5	7.9	8.4	8.6	7.5	4.3	NR	6.3	NR	8.4	NR
290016	11	4.3	7.5	5.1	4.6	4.6	5.2	7.3	NR	5.4	4.5	NR	6.4	5.1	8.9	8.2	8.8	9.0	7.7	4.5	NR	6.4	NR	8.7	8.8
290017	12	4.6	8.0	5.5	4.8	4.8	NR	7.9	2.2	5.8	4.8	NR	6.8	5.3	9.4	9.0	9.3	9.5	8.2	4.8	NR	6.9	NR	9.2	9.5
290018	13	5.0	8.8	6.0	5.6	5.3	NR	8.7	3.3	6.5	5.3	NR	7.6	5.8	10.3	9.7	10.1	10.4	9.0	5.3	NR	7.6	10.3	10.2	10.5
290019	14	5.5	9.4	6.4	6.0	5.8	NR	9.3	3.5	6.8	5.7	NR	8.1	6.4	11.1	10.5	11.0	11.1	9.6	5.7	NR	8.1	11.0	10.8	11.2
290020	15	5.8	9.9	6.8	6.4	6.0	NR	9.8	3.7	7.2	5.9	NR	8.5	6.7	11.8	11.1	11.6	11.8	10.2	6.0	NR	8.5	11.6	11.5	11.9
290021	16	6.1	10.3	7.1	6.7	6.4	NR	10.3	4.2	7.5	6.2	8.9	8.9	7.0	12.4	11.5	12.3	12.4	10.7	NR	NR	8.9	12.2	12.2	12.6
290022	17	6.5	11.5	7.9	7.6	7.0	NR	11.4	4.8	8.4	6.8	9.7	9.8	7.7	13.7	12.8	13.5	13.7	11.8	NR	NR	9.9	13.6	13.4	13.8
290023	18	NR	12.1	8.1	7.8	7.3	NR	12.0	5.3	8.7	7.3	10.1	10.2	8.0	14.1	13.3	13.9	14.0	12.2	NR	10.1	NR	14.0	13.8	14.3
290024	19	NR	12.3	8.6	8.3	7.6	NR	12.7	6.0	9.2	7.7	10.8	10.6	8.4	15.0	13.9	14.6	14.9	12.9	NR	10.8	NR	14.7	14.6	15.1
290025	20	NR	13.4	9.1	8.8	8.0	NR	13.4	6.4	9.7	8.1	11.4	11.4	8.8	15.7	14.9	15.6	15.6	13.6	NR	11.5	NR	15.6	15.5	16.0
290026	21	NR	14.7	9.9	9.7	8.9	NR	14.7	7.2	10.6	8.7	12.5	12.6	9.7	17.6	16.2	17.1	17.5	15.1	NR	12.5	NR	17.1	16.8	17.5
290027	22	NR	15.7	10.4	10.2	9.4	NR	15.5	7.5	11.4	9.5	13.2	13.2	10.4	18.3	17.0	17.7	17.9	15.9	NR	13.2	NR	17.9	18.0	18.3

NOTE: All Powder Designated in Grains. NR = Not Recommended.

**PACIFIC CASE TRIMMER PILOT CHART**

Bullet Diameter	Pilot Number	Bullet Diameter	Pilot Number
.224"	1	.323"	11
.228"	2	.333"	12
.243"	3	.338"	13
.257"	4	.348"	14
.264"	5	.358"	15
.277"	6	.375"	16
.284"	7	.410"	17
.300"	8	.429"	18
.308"	9	.452"	19
.312"	10		



# *Illustrated Glossary*

## ILLUSTRATED GLOSSARY

**ACCURACY:** The measure of a bullet's precision; the term describing a firearm's ability to shoot consistently where aimed.

**ACTION:** That portion of the firearm where the round is loaded, fired, and unloaded.

**AIR RESISTANCE:** A vacuum is space empty of all matter; but our atmosphere is composed of matter and this matter retards the forward motion of a projectile, slowing it down and limiting its maximum range. The relative ability of a bullet to overcome this resistance is termed its ballistic efficiency.

**ANNEAL:** To soften metal by heating; especially, to soften brass cartridge case necks to prevent cracking from repeated resizing. See *Work Harden*.

**ANTIMONY:** A metallic element used in lead alloys to harden them. Most lead bullet cores use up to 3% antimony to give them the hardness necessary for best results.

**ANVIL:** A metallic point against which the explosive compound of a primer is driven by the firing pin, striker, or hammer of a firearm to produce detonation. See also *Boxer Primer* (a primer in which the anvil is self-contained) and *Berdan Primer* (a primer whose anvil is a part of the cartridge case).

**BALANCE:** a weighing instrument which suspends two pans of equal weight from a beam supported precisely in the middle. See *Powder Scale*.

**BALLISTICS:** The science which studies the behavior of projectiles in motion. Interior Ballistics concerns itself with events inside a gun from primer ignition through the projectile's departure from the muzzle; Exterior Ballistics deals with the motion of the projectile after it leaves the gun.

**BALLISTIC COEFFICIENT:** The index of a bullet's ability to overcome resistance in flight relative to the performance of a standard projectile used to compute ballistic tables. Mathematically, the ratio of a bullet's weight to the product of the square of its diameter and its form factor.

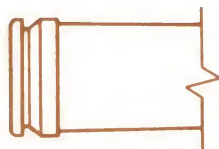
**BALL POWDER:** The name given by Olin Industries to the essentially spherical double based smokeless powder the firm developed for the U. S. Military. Claimed to retard throat erosion.

**BARREL CYLINDER GAP:** The opening or gap present between the cylinder and the barrel in any revolver.

**BEARING SURFACE:** That portion of a bullet which contacts the lands and grooves as it travels through a barrel. Sufficient bearing sur-

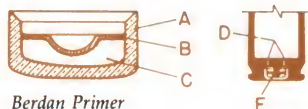
face is required for good accuracy. See *Bullet*.

**BEDDING:** A material and/or method for fitting the barrel and/or action to a stock.



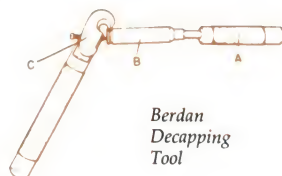
*Belted Case*

**BELTED CASE:** Cartridge case which features a raised band around the base and ahead of the extraction groove. Cases of this design headspace off the belt. See *Headspace*.



*Berdan Primer*

**BERDAN PRIMER:** Commonly used in European cartridges. Berdan primers have no anvil, utilize a protrusion from the top of the primer pocket for the purpose. In illustration: A, cup; B, protective disc; C, priming compound; D, flash holes; E, anvil (part of the case).



*Berdan  
Decapping  
Tool*

**BERDAN DECAPPING TOOL:** A device for depriming Berdan cases. Case holder (A) supports case (B) while decapping unit (C) pries out primer.

**BLACKPOWDER:** The earliest propellant powder; made of potassium nitrate, charcoal, and sulphur. Thought to be a Chinese invention, it was known in Europe by the 13th Century, is still used today in muzzle-loading firearms.

**BOAT TAIL:** A tapered bullet heel used frequently on military and match bullets. See *Bullet Types*.

**BOLT:** That part of a rifle or shotgun which houses the striker and the case extractor mechanism and rotates to lock the cartridge or shell in the firearm's chamber. See also *Locking Lug and Chamber*.

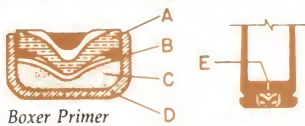
**BOLT THRUST:** The force on the face of the bolt directly caused by the pressure of burning powder.



Bore

**BORE:** The inside of a firearm's barrel. In rifled firearms the bore diameter is the original dimension of the barrel before the rifling grooves are cut or swaged (dimension A). Dimension B is groove diameter.

**BORE SIGHT:** To align the sights of a rifle with a target by sighting through the barrel.



Boxer Primer

**BOXER PRIMER:** The type of primer used in American military and sporting rifle and pistol ammunition. Anvil is self contained, case features one central flash hole. In illustration: A, anvil; B, protective disc; C, priming compound; D, cup; E, case's flash hole. See *Primer*.

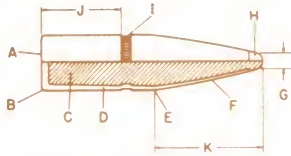
**BRASS:** An alloy of copper and zinc used to make cartridge cases and bullet jackets. Also, a common name for cases themselves. See *Gilding Metal*.

**BRISANCE:** Shattering effect of explosives.

Broken  
Shell  
Extractor



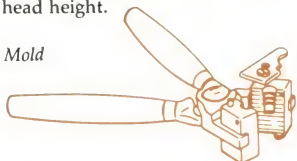
**BROKEN SHELL EXTRACTOR:** A device for removing headless cases from the chamber of a firearm.



Bullet

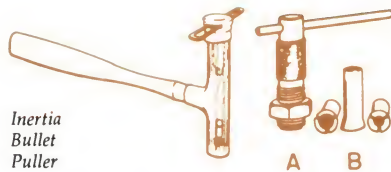
**BULLET:** The projectile shot from a rifle or pistol. To be accurate its center of gravity must be concentric with its center of form. Bullet parts and dimensions include: A, base; B, heel; C, core; D, jacket; E, shoulder; F, ogive; G, meplat; H, point; I, cannellure; J, bearing surface; K, head height.

Bullet Mold



**BULLET MOLD:** A frame with cavity in which lead bullets are cast. A single cavity mold is illustrated. See also *Gang Mold*.

**BULLET PULL:** The amount of force necessary to pull a bullet from a case.



Inertia  
Bullet  
Puller

**BULLET PULLER:** Device for removing bullets from cases. Figure 1 is inertia type; Figure 2 is collet type (A, collet closer; B, collets).

**BULLET TYPES:** Different bullet designs fit different shooting needs: (Sectional views shown)



Spire Point

A hunting bullet designed for longer range shooting.



Round Nose

A dependable brush-busting style preferred for hunting in cover.

Flat Point



A Round Nose variation used in rifles with tubular magazines.



Hollow Point

A popular varmint bullet with open tip and thin jacket. (Varmint bullets come also with lead points.)



Full Metal Jacket

FMJ's have thick, tough jackets of nickel silver or clad steel for use on dangerous African and Asian species.



Boat Tail Hollow Point

An accurate, very efficient match style.



Short Jacket

An economical semi-jacketed bullet for rifles or pistols.





Cast Bullet

Lead bullets cast from molten metal and often used with gas checks.

**BURNING RATE:** The relative speed at which smokeless powders burn. Determined by size of granules, perforation, and amount and nature of deterrent coating. See also *Deterrent Coating*.

**CALIBER:** The diameter of a bullet or other projectile in decimals of an inch or millimeters; the nominal or approximate diameter of a bore expressed similarly.

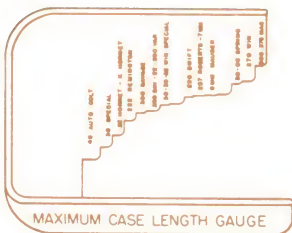
**CANNELURE:** An identification, crimping, or lubricant groove on a bullet. See *Bullet*.

**CANISTER:** A container; powders packed by their manufacturer in canisters are carefully standardized for consistency.

**CARTRIDGE:** A complete unit of ammunition, especially rifle or pistol ammunition.

**CARTRIDGE DESIGNATIONS:** Various cartridge naming systems have been and are employed. Some cartridges are named by caliber and inventor or factory (257 Roberts, 284 Winchester); by special trade names (22 Hornet); by caliber and velocity (250-3000 Savage); by caliber and year of introduction (30-'06, for 1906); by caliber and case from which new cartridge was made (22-250, 6mm/284); by alteration of original case design (30-06 Improved); in Europe, by metric measurement of caliber and case length (7mm x 57mm); and by caliber, powder charge, and bullet weight (45-70-500 for 45 caliber, 70 grains of black powder, and a 500 grain bullet).

**CASE:** Or cartridge case; that paper, plastic, or metal container which holds all other components of fixed ammunition. Basic case designs are straight, tapered, or bottle necked. For cartridge head styles see also cases listed as *Belted*, *Rebated Rim*, *Rimless*, *Rimmed*, and *Semi-Rimless*.



Case Length Gauge

**CASE LENGTH GAUGE:** Device to measure cartridge case length. Figure 1 is familiar snap gauge:

**CASE HARDENING:** A surface hardening

process which changes the outer layer of iron base alloys. Such processes are used to harden reloading dies.

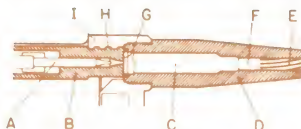
**CASE NECK BRUSH:** A brush used to clean and lubricate the inside of a case neck.



**CASE TRIMMER:** Cartridge cases stretch with repeated resizing and firing and must be trimmed to proper length. The Pacific case trimmer handles all types of cases by changing to the same shellholder used in the reloading press.

**CAST BULLET:** A bullet made by pouring molten lead into a mold. See *Bullet Types*.

**CENTERFIRE:** A type of ammunition whose primer is centrally positioned in the base of the cartridge case and generally reloadable.



Chamber

**CHAMBER:** That breech portion of the barrel which contains and supports the cartridge. In illustration: A, striker; B, bolt; C, chamber; D, barrel; E, rifling; F, leade; G, bolt face; H, locking lugs; I, receiver.



Chamfering Deburring Tool

**CHAMFERING - DEBURRING TOOL:** A device to chamfer (bevel) the inside of a cartridge case mouth to facilitate bullet seating and to remove outside burrs from the case.

**CHARGE:** The amount of powder loaded in a case, as "a charge of 23.5 grains of BL-C".

**CHRONOGRAPH:** An instrument for measuring time intervals. Chronographs are used to determine the time of flight of projectiles over a fixed length course, and this distance divided by the time of flight is the velocity of the projectile.



Collimator

**COLLIMATOR:** In shooting, an optical device used to align telescopic sights on rifles or pistols.

**COMBUSTION:** Burning; the chemical process which unites oxygen and the other sub-

stances in gunpowder to produce heat and gas.

**COMPRESSED CHARGE:** A charge of powder that does not allow ample room in the case for the bullet to be seated and is therefore compacted when the bullet is seated.

**COMPONENTS:** The ingredients necessary in loading a cartridge.

**COPPER:** The basic metallic ingredient of such alloys as bronze, brass, or gilding metal.

**COPPER CRUSHER:** A copper alloy cylinder of precise dimensions and known density used in chamber pressure measurement. Compression of the cylinder — its change in length — is an index of pressure and when used with tarage tables prepared specifically for the lot of crushers used denotes chamber pressure in pounds per square inch. See *Pressure Gun*.

**CORDITE:** A double-based tubular shaped powder.

**CORE:** The central portion of a jacketed bullet. See *Bullet*.

**C PRESS:** An early and still extremely popular reloading press design. So named for its shape. For illustration, see *Reloading Press*.

**CRIMP:** To fold in a cartridge case mouth to grip the bullet securely; to fold in the mouth of a shotshell.

**CRIMPED PRIMER:** In military ammunition, a primer which has been secured in the primer pocket by a flange indented from the mouth of the pocket. Such crimping both helps seal the primer in the case and prevent primer setback on firing. Crimp must be removed before reloading. See *Primer Pocket Swaging*.



Crimp On Gas Check

**CRIMP ON GAS CHECK:** A superior gas check design — exclusive with Hornady Manufacturing Co. — which crimps or pinches on the base of a cast bullet and will not come off in the case or barrel — or in flight. Illustrations show gas check on bullet and the gas check crimped on. See also *Gas Check*.

**CRIMP REMOVER:** A reloading accessory to remove crimps from the mouths of military case primer pockets. See *Primer Pocket Swaging*.

**DEBURRING TOOL:** A device to remove metal burrs from the mouths of newly trimmed cases. See *Chamfering-Deburring Tool*.

**DECAP:** Deprimer; to remove the primer

from a cartridge case. See *Berdan Decapping Tool and Resizing Die*.

**DETERRENT COATING:** The combustion controlling chemical coating used on smokeless powder particles to produce desired burning characteristics.

**DIE:** Mechanically, a tool for cutting, molding, extruding, stamping, drawing, or shaping. In bullet manufacture, a tool for extruding lead wire, drawing jackets, or swaging bullets or cores. In reloading, a tool for resizing cases or seating bullets. See *Resizing Die and Seating Die*.

**DOUBLE BASE POWDER:** Smokeless powder made with both nitrocellulose and nitroglycerine.

**DRIFT:** Slight deviation from a projectile's initial flight course caused by its rotation.



**DROP:** The fall of a bullet measured from its line of departure. AB, line of departure; AC, trajectory; BC, drop. Bullets fall because of force of gravity acting on them.

**ELEVATION:** Vertical sight adjustment to bring the point of aim up or down to the point of impact.

**ENERGY:** The capacity for doing work (transferring force). Spoken of in ballistics as *Muzzle Energy* or *Remaining Energy*. The measure of energy in ballistics is the *Foot Pound*.

**EROSION:** Bore or throat wear in a firearm from the effects of hot gases or friction.

#### EXPANSION RATIO:

$$\frac{\text{Case Volume} + \text{Bore Volume}}{\text{Case Volume}}$$

**EXTRUDED PRIMER:** The pronounced flow of primer metal ("cratering") around the striker or firing pin of a firearm. An indication of excessive pressure.

**EXTRUSION:** A material forming process in which the material is forced through a die of the desired shape. Lead wire is extruded from large cylindrical billets.

**EYE RELIEF:** The distance the eye must be held from the rear (ocular) lens or eyepiece of a telescope in order to obtain a full field of view.

**FIRING PIN:** That part of a firearm which the trigger/sear mechanism releases to strike the primer of a cartridge and detonate it. More accurately termed a striker in most bolt action rifles.

**FLAT POINT:** A bullet style characterized by its blunt point and designed especially for rifles with tubular magazines. See *Bullet Types*.

**FLAKE POWDER:** A thin flat disc type smokeless powder, generally very fast burning.

**FLASH HOLE:** The hole or holes from the primer pocket through the web of a centerfire case through which the primer flame passes to ignite the powder.

**FOOT-POUND (ft.-lb.):** A unit of work; the energy required to lift one pound one foot.

**FORCING CONE:** The rear beveled portion of the barrel of a revolver.

**FORM FACTOR:** A multiplier (also called the coefficient of reduction) which relates the shape of a bullet to the shape of the standard projectile used to prepare a particular ballistic table.

**FPS:** Feet per second.

**FIREFORM:** To reform a cartridge case by firing it in a chamber of different dimensions.

**FREEBORE:** An unrifled portion of the bore in front of the chamber. See *Chamber, Leade*.

**FULL METAL JACKET (FMJ):** A bullet whose jacket is open only at the rear. FMJ's for hunting are non-expanding and generally used on thick skinned animals. Full metal jacket or full patch bullets are also used by the military. See *Bullet Types*.

**GALLING:** A roughness on the surface of two metals created from friction as the two surfaces are "rubbed" together - as in resizing a cartridge case in a die with no lubricant.



**GANG MOLD:** A multiple cavity bullet mold.

**GAS:** The vaporous form of a substance capable of expanding indefinitely to fill its container. Gases are a product of the combustion of gunpowder and expand to propel the projectile down the bore.

**GAS CHECK:** A rimmed gilding metal disc attached to the base of a cast lead bullet to protect it from hot powder gases. See also *Crimp On Gas Check*.

**GILDING METAL:** The copper-zinc alloy used to make bullet jackets. Hornady Bullets use an alloy of 95% copper, 5% zinc.



Go-No  
Go Gauges



**GO-NO GO GAUGES:** Also Minimum-Maximum Gauges. Standard measuring devices to indicate proper headspace in a firearm, proper cartridge length, etc.

**GRAIN:** The smallest unit of the British and U.S. system of weights. One pound avoirdupois equals 7,000 grains.

**GRAM:** The basic unit of weight in the metric system. Equal to 15.4324 grains.

**GREASE GROOVE:** Circumferential indentation on a swaged or cast bullet to hold lubricant.



Grooves

**GROOVES:** Swaged impressions or cuts spiraled through a bore to rotate projectiles. Groove diameter is represented in the illustration by line A.

**GROUP:** The distribution of bullets on a target fired with a single aiming point and sight setting. Group size is expressed as the distance between centers of the farthest holes and is most easily determined by measuring the extreme spread from outside to outside and subtracting one bullet diameter.

**HALF-JACKET:** A swaged lead bullet that has a jacket covering half the bullet with the remainder of the lead exposed.

**HANDLOADING:** Loading individual cartridges with hand tools.

**HANGFIRE:** An inordinate delay between the striking of the primer and powder ignition.

**HEAD HEIGHT:** The height of a bullet from its shoulder to the tip of its point. See *Bullet*.

**HEADSPACE:** The fit of a cartridge in a chamber measured as the distance from breech face to that part of the chamber which stops the case's forward movement. Insufficient headspace hinders complete chambering; excessive headspace permits case stretching or separation. Four different headspace arrangements are illustrated here. H denotes headspace in each example.



Headspace determined by the thickness of the cartridge case rim.





*Rimless Case*

Shoulder of the case stops it in chamber.



*Belted Case*

Case is stopped by the top rim of the belt.



*Rimless Case  
Straight*

Shown is the 45 ACP cartridge; its forward motion is stopped by the mouth of the case.

**HEEL:** The edge of a bullet's base. See *Bullet*.

**HOLD OVER:** The distance a shooter must raise his point of aim to be on target when his firearm is zeroed in at a lesser distance. The Ballistic Tables in this handbook give a more detailed discussion of the subject.

**HOLLOW POINT:** An opening in the point of a bullet. See *Bullet Types*.

**IGNITION:** The powder "lighting" (igniting) process; the primer's sole job.

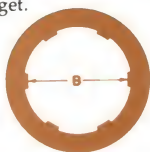
**IMPROVED CARTRIDGE:** A cartridge altered to new dimensions by fireforming in an "improved" chamber. Improved cases generally have a sharper shoulder, less taper, and greater powder capacity than standard cases.

**IMR:** "Improved Military Rifle"; DuPont's name for its line of single base canister rifle powders.

**INGALLS' TABLES:** Ballistic tables computed by the late Col. James M. Ingalls of the U. S. Army. Through their use it is possible to calculate remaining velocities and the trajectories for small arms projectiles.

**JACKET:** The outer casing or covering of a projectile. See *Bullet*.

**KEYHOLE:** The imprint of an unstabilized bullet on a target.



*Lands*

**LANDS:** Those portions of the bore not cut away by rifling grooves. Bore diameter is represented by line B.

**LEAD:** The heavy, pliable metal which (gen-

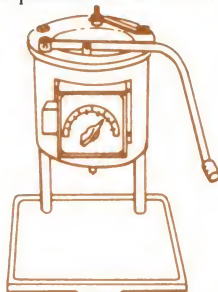
erally) in alloy form is the principal ingredient of bullet cores and swaged or cast bullets.



*Lead Dipper*

**LEAD DIPPER:** A ladle to pour molten lead into bullet molds.

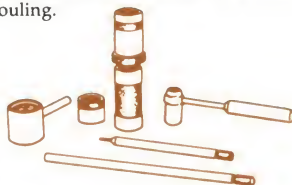
**LEADE:** Freebore; the unrifled bore area immediately in front of the chamber. In most firearms it is quite short. See *Chamber*.



*Lead  
Furnace*

**LEAD FURNACE:** A heated container in which lead is melted for casting bullets.

**LEADING:** The process in which lead is deposited in the bores of rifles or pistols when lead bullets are shot in them. One form of metal fouling.

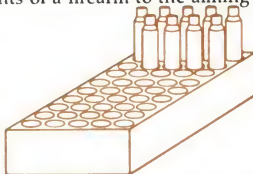


*Lee  
Loader*

**LEE LOADER:** A simple and inexpensive reloading device manufactured by Lee Custom Engineering Company.

**LINE OF DEPARTURE:** A projection of the axis of the bore from which a projectile is fired.

**LINE OF SIGHT:** The straight line through the sights of a firearm to the aiming point.

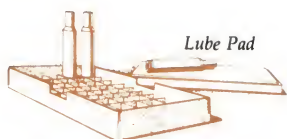


*Loading  
Block*

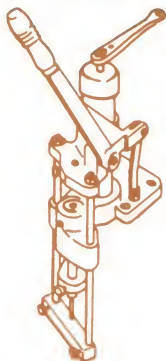
**LOADING BLOCK:** A useful accessory for holding cartridge cases for reloading.

**LOADING DENSITY:** A volume ratio of powder charge to case capacity.

**LOCKING LUGS:** Bolt projections which fit mating recesses in the receiver to secure the bolt from rearward movement when a cartridge is fired. For illustration, see *Chamber*.



**LUBE PAD:** A lubricant impregnated stamp pad on which cases are rolled before sizing.



*Lubricator-Resizer*

**LUBRICATOR-RESIZER:** A tool which inserts lubricant in grease grooves, swages cast bullets to final size, and seats gas checks.

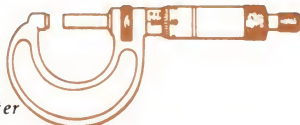
**MAGNUM:** A cartridge or firearm of greater power and capacity than earlier standards in the same caliber.

**MEAN RADIUS:** The average radius of any group of shots from the center of the group.

**MEPLAT:** The diameter of the blunt end of the tip of a projectile. The smaller the meplat, the greater the projectile's ballistic efficiency. See *Bullet*.

**MERCURIC PRIMER:** A primer whose explosive mixture contains mercuric compounds which will attack brass cartridge cases after firing.

**METAL FOULING:** The depositing of bullet or jacket metal in the bore of a firearm, a process detrimental to best accuracy. See *Leading*.



*Micrometer*

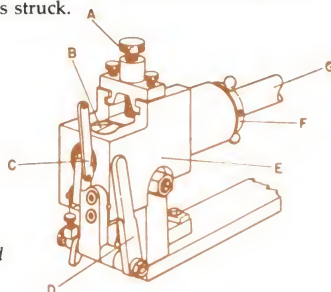
**MICROMETER:** A caliper type measuring instrument with a fine screw adjustment for measuring minute distances. Useful to the re-loader for measuring bullets, case head expansion, etc.

**MID-RANGE TRAJECTORY:** The height of the trajectory at a point halfway between the muzzle and the point of aim.

**MINUTE OF ANGLE (MOA):** The arc subtended by an angle of one minute (1/60th of a

degree) at any range, usually at 100 yards. A minute of angle at 100 yards is 1.0471680" — so close to an inch that for all practical purposes it is considered an inch.

**MISFIRE:** A cartridge which fails to fire after its primer is struck.



*Modern-Bond Receiver*

**MODERN-BOND RECEIVER:** A strong, heavy laboratory receiver which will accept special barrels of different calibers to measure chamber pressure by the copper crusher method. In illustration: A, adjustable anvil; B, breach block; C, firing pin release lever; D, breech locking handle; E, receiver; F, barrel capstan nut; G, barrel. See also *Pressure Gun*.

**MOULD BLOCKS:** Metal blocks with bullet shaped cavities for casting bullets.

**MUSHROOM:** To expand; said of a bullet which has passed through animal tissue or similar mediums because of the bullet's expanded shape.

**MUZZLE BLAST:** The release of gas from the muzzle following the bullet's departure from the barrel. It always produces noise and is often accompanied by light called muzzle flash.

**MUZZLE ENERGY:** Foot pounds of energy of a projectile at the muzzle of a firearm.

**MUZZLE VELOCITY:** The speed of a projectile at the muzzle of a firearm.

**NECK:** The upper portion of a cartridge case which grips the bullet, expands on firing to release it, and in reloading must be resized to hold a new bullet.

**NECK REAM:** The process of removing metal from the inside of the neck of a case.

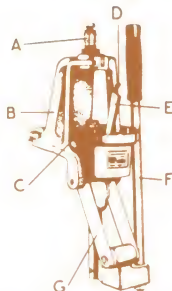
**NECK SIZE:** To bring the neck of a case back to its original dimensions to hold a new bullet. Cases fired in the same chamber need neck sizing (resizing) only. See *Resizing Die*.

**NECK TURN:** The process of reducing neck wall thickness from the outside of the case.

**NONCORROSIVE:** Primers made without potassium chlorate, a chemical which when oxidized forms a water-attracting salt which induces bore rusting. American primers for

sporting ammunition have been almost entirely noncorrosive since the 1930's. The U. S. military did not decide to convert all small arms ammunition to non-corrosive priming until 1949 and total conversion was not achieved until several years later.

**OGIVE:** The curve of a bullet's forward portion. See *Bullet*, *Secant Ogive*, and *Tangent Ogive*.



**O PRESS:** A very strong type of reloading press with a continuous frame. Pacific's Multipower "C" pictured, is such a type.

**OIL DENT:** Small dents in cartridge cases that result from too much lubricant when resizing.

**OVERBORE CAPACITY:** Any cartridge that has a volume too large in relation to bore diameter with normally available powders.

**PARALLAX:** The condition which exists when the reticle of a scope does not lie exactly on the image plane. When this optical error exists, changes of eye position will move the position of the reticle relative to the object sighted.

**PIERCED PRIMER:** A primer whose cup is completely perforated by the striker. Such a condition permits powder gases to escape rearward into the action.

**PLINKING:** Informal target shooting.

**POINT:** The tip of a bullet. See *Bullet*. See *Bullet Types* for various point configurations.

**POINT OF AIM:** That point with which a firearm's sights are aligned.

**POINT OF IMPACT:** That point which a bullet strikes; usually considered in relation to *Point of Aim*.

**PORT PRESSURE:** The pressure at the gas port from a gas operated firearm.

**POWDER:** Gunpowder; an explosive comprised of mixtures of various substances that when ignited, produces large volumes of gas. Used in firearms to propel projectiles. See *Blackpowder*, *Smokeless Powder*.

**POWDER BRIDGING:** The act of powder

kernels interlocking in the drop tube of a powder measure and forming a "bridge" preventing the powder from passing through the tube - common to coarse extruded powders.



*Powder Funnel*

**POWDER FUNNEL:** A handy reloading accessory which facilitates charging cases with powder.



*Powder Measure*

**POWDER MEASURE:** A reloading device designed to throw uniform powder charges. The Pacific Powder Measure illustrated is adjusted by a micrometer dial.



*Powder Scale*

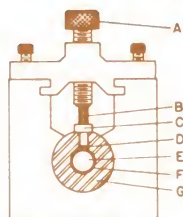
**POWDER SCALE:** A measuring device to weigh powder. Markers are moved along the graduated beam to the desired setting and powder is poured into the pan until the scale balances.



*Powder  
Trickler*

**POWDER TRICKLER:** A reloading accessory to drop minute quantities of powder to facilitate precise weighing.

**PRESSURE:** Force per unit area, measured in interior ballistics terms of pounds per square inch.



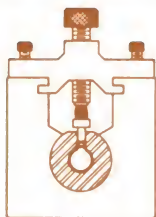
*Pressure  
Gun*

**PRESSURE GUN:** A laboratory device for measuring the breech pressure of ammunition. Shown in Figure I is a cross section of a



*Modern-Bond Receiver.* A, adjustable anvil B, copper crusher; C, piston; D, gas check; E, inside of cartridge case; F, case wall; G, barrel.

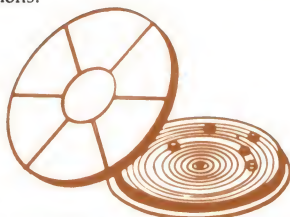
*Pressure Gun*



In Figure II, cartridge has been fired. Pressure has perforated the wall of the case, driven up the piston and copper cylinder (crusher) against the anvil. See also *Copper Crusher*.

**PRIMER:** The small cup containing an explosive compound which is detonated to ignite the powder in centerfire metallic ammunition. Also, caps to ignite charges in muzzle loading arms. See *Berdan Primer* and *Boxer Primer* for illustrations.

*Primer Flipper*



**PRIMER FLIPPER:** An accessory to orient primers in the same direction for convenient use.

**PRIMER LEAK:** Gases that have escaped between the primer and the primer pocket wall due to excess pressure.

**PRIMER POCKET:** The cavity in the base of a centerfire case which holds the primer. See *Boxer Primer*.

*Punch and Base Set*



**PRIMER POCKET SWAGING:** Removing the crimp in primer pocket of a military case by using a punch and base set such as shown above. Crimps may also be removed by reaming.

**PRIMER TOOL:** A tool designed specifically for priming.

**PROJECTILE:** A bullet, shell, golfball or other object hurled, hit, or shot in space.

**PROOF:** The test of a firearm's ability to withstand working pressures and strains. High pressure loads (proof loads sometimes called "blue pills") are fired to establish a margin of

extra strength in the arm — and thus a margin of safety. European governments oversee such testing by law, but firearms manufacturers in the U.S. conduct proof testing privately and independently.

**PROPELLANT:** The powder burned to propel a projectile.

**PROTRUDING PRIMER:** A primer that, after firing, backs out beyond flush with the case head, normally a result of excess headspace or a low pressure load.

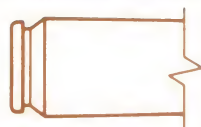
**RANGE:** The horizontal distance to an intended target.

**REAM:** To make a cavity or remove material from a cavity with a rotary cutting tool.

*Neck Reamer*



**REAMER:** A rotary cutting tool such as one used to make rifle or pistol chambers or reloading dies. Also, a small hand tool used to remove crimps from military primer pockets or to ream case necks (illustrated).



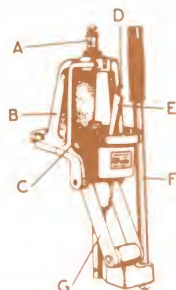
*Rebated Rim Case*

**REBATED RIM CASE:** A case (such as the 284 Winchester) whose body diameter is greater than its rim diameter.

**RECEIVER:** That portion of a firearm which holds the barrel and houses the bolt and firing mechanism. See *Chamber* for illustration.

**RECOIL:** The rearward motion or "kick" of a gun on firing. Recoil in shooting is the practical effect of Newton's Third Law of Motion: for every action there is an opposite and equal reaction.

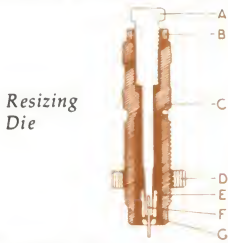
*Reloading Press*



**RELOADING PRESS:** A tool for reforming cartridge case and seating bullets in cartridge reloading. Illustrated is the Pacific Multi-Power C tool. A, resizing die; B, frame; C, shell holder; D, spring loaded primer holder; E, primer arm; F, handle; G, linkage.

**REMAINING ENERGY:** A projectile's energy in foot-pounds at a given range.

**REMAINING VELOCITY:** A projectile's velocity in feet per second at a given range.



Resizing Die

**RESIZING DIE:** The reloading die which reforms cartridge cases to proper dimensions. The cut away diagram of a Pacific die illustrates the following parts: A, decapping stem; B, decapping stem lock ring; C, die body; D, die body lock ring; E, neck expanding plug; F, decapping pin; G, die cavity.

**RETICLE:** The system of crosshairs, fine lines, or dots in the focus of a telescope, used for aiming.

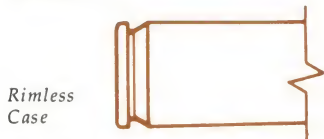
**RIFLING:** The spiral grooves in the bore of a rifled firearm. The rotation they impart to a projectile stabilizes it in flight.



Rimmed Case

**RIMMED CASE:** A case with a flange on its base. This rim is used for both extraction and as a means of headspacing the cartridge.

**RIMFIRE:** A type of cartridge in which the priming compound is spun into the rim. Not reloadable.



Rimless Case

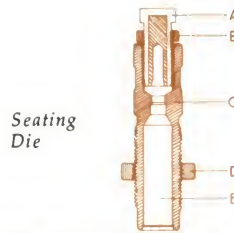
**RIMLESS CASE:** Cartridge case whose base flange is the same diameter as the case head. Groove ahead of the rim permits extraction.

**ROTATION:** The spin of a projectile imparted to it by the rifling. The faster the *Twist* of the rifling and/or the higher the velocity, the faster the rotation.

**ROUND:** One complete unit of ammunition.

**ROUND NOSE:** A bullet with blunt rounded tip preferred for hunting at moderate ranges or in brushy country. For illustration see *Bullet Types*.

**SAAMI:** Sporting Arms and Ammunition Manufacturer's Institute. In the U. S., this organization maintains and provides standard specifications for cartridge cases and chamber dimensions.



Seating Die

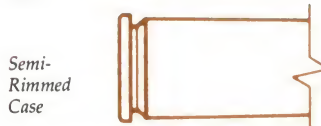
**SEATING DIE:** A reloading die that inserts the bullet in the neck of the cartridge case. In the illustration: A, seating stem; B, seating stem lock ring; C, die body; D, die body lock ring; E, die cavity.

**SEATING DEPTH:** The length of a bullet seated inside the cartridge case.



**SECANT OGIVE:** Bullet design in which the cylindrical surface of a bullet is secant to the curve of the head. The design used in Hornady Spire Point Bullets.

**SECTIONAL DENSITY:** The ratio of a bullet's weight in pounds to the square of its diameter in inches. Bullets of the same shape but with more weight in relation to their diameter retain their velocity and energy better.



Semi-Rimmed Case

**SEMI-RIMMED CASE:** A cartridge case with a rim slightly larger than the body diameter. Extraction groove is not as deeply cut in this type of case as in a rimless case.

**SHANK:** The cylindrical section of a bullet.

**SHELL HOLDER:** The cartridge case holder on a *Reloading Press* or other tool.

**SHOCK:** The transference of the kinetic energy of a bullet to animal tissue or other mediums.

**SHOCK WAVE:** The atmospheric disturbance produced by a supersonic projectile.

**SHORT JACKET:** A type of bullet swaged from a lead core and short gilding metal cup. See *Bullet Types*.

**SHOULDER:** The projection of a bottle necked cartridge case from the neck to the case body; or, the point at which the head of a projectile joins the cylindrical rear portion.

**SIGHT:** A device for aiming a firearm; or, the process of aiming.

**SIGHTING IN:** Firing a rifle or pistol to determine its point of impact at a specified range and to adjust the sights so that the point of impact has the desired relationship to the point of aim.

**SIGHT RADIUS:** The distance between front and rear iron sights.

**SINGLE BASE POWDER:** Smokeless powder made of nitrocellulose.

**SIZE:** To resize; see *Resizing Die*.

**SLUG:** (1) A hollow based lead bullet used primarily in shotguns for deer hunting. (2) To slug a barrel is to force a soft lead projectile through the bore of a gun to determine bore and groove diameter.

**SMOKELESS POWDER:** A high energy propellant used in small arms projectiles.

**SOFT POINT:** Any jacketed bullet with an exposed lead tip.

**SPIN:** The rotation of a projectile imparted by the rifling in a firearm's bore.

**SPIRE POINT:** An efficient bullet design for long range big game or varmint hunting or target shooting. See *Bullet Types* and *Secant Ogive*.

**SPITZER:** A pointed bullet, usually one whose head design is a *Tangent Ogive*.

**STABILIZE:** To rotate a projectile around its longitudinal axis rapidly enough to keep it point on in flight.



**STUCK CASE REMOVER:** A device to remove stuck cases in a reloading die. Pacific unit is illustrated.

**SWAGE:** To form with pressure.



**TANGENT OGIVE:** A bullet whose cylindrical surface is tangent to the curve of the point. The radius of the ogive is generally expressed in calibers.

**THROAT:** Leade or freebore; the unrifled portion of the bore immediately in front of the chamber. Generally very short. See *Chamber* for illustration.

**TIME OF FLIGHT:** The time it takes a projectile to cover a given distance.



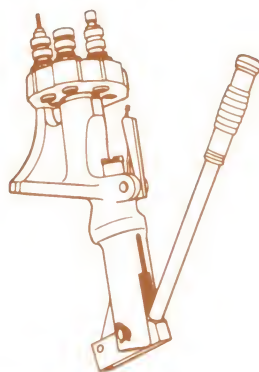
**TONG TOOL:** A hand held reloading tool. The Lyman 310 Tong Tool is illustrated.

**TRAJECTORY:** The flight path of a projectile.

**TRANSDUCER:** A quartz type device used with an oscilloscope to determine chamber pressures.

**TUNGSTEN CARBIDE:** A metal composed of powdered carbide of tungsten cemented (fused) together under heat with cobalt. The hardest man made metal; used in many pistol case resizing dies — and in all the bullet drawing and swaging dies for making Hornady Bullets.

**TUBULAR POWDER:** Smokeless powder whose cylindrical granules have one or more longitudinal holes through them.



**TURRET TOOL:** A reloading press with rotating turret for positioning resizing and seating dies and powder measure. A Lyman press is illustrated.

**TWIST:** The rate of spiral of the grooves of a rifle barrel expressed in length of barrel per revolution.

**VARMINT:** A non-game animal commonly considered a pest - also known as vermin.

**VELOCITY:** The speed of a projectile expressed as distance per unit time.



*Vernier  
Caliper*

**VERNIER CALIPER:** A graduated instrument for measuring distances precisely. Very useful to the reloader in measuring case and overall cartridge lengths.

**WADCUTTER:** A swaged or cast pistol bullet. Its primary purpose is for target shooting. Because of its shape, it cuts neat holes in the target.

**WEB:** The thickness of the solid portion of a brass cartridge case between primer pocket and case interior; the wall thickness of tubular powder.

**WILDCAT:** A non-commercial cartridge design.

**WINDAGE:** Horizontal (lateral) sight adjustment.

*Wind  
Deflection*

**WIND DEFLECTION:** The lateral deflection of a bullet caused by cross wind.

**WORK HARDEN:** To change the grain structure of metal by drawing or working. Brittle, work hardened case necks are often annealed to prevent cracking.

**YAW:** Normally, a situation where a bullet rotates on its axis at a small angle to the line of flight.

**ZERO:** In shooting, the sight setting at which point of impact and point of aim coincide at a given range.

## NOTES

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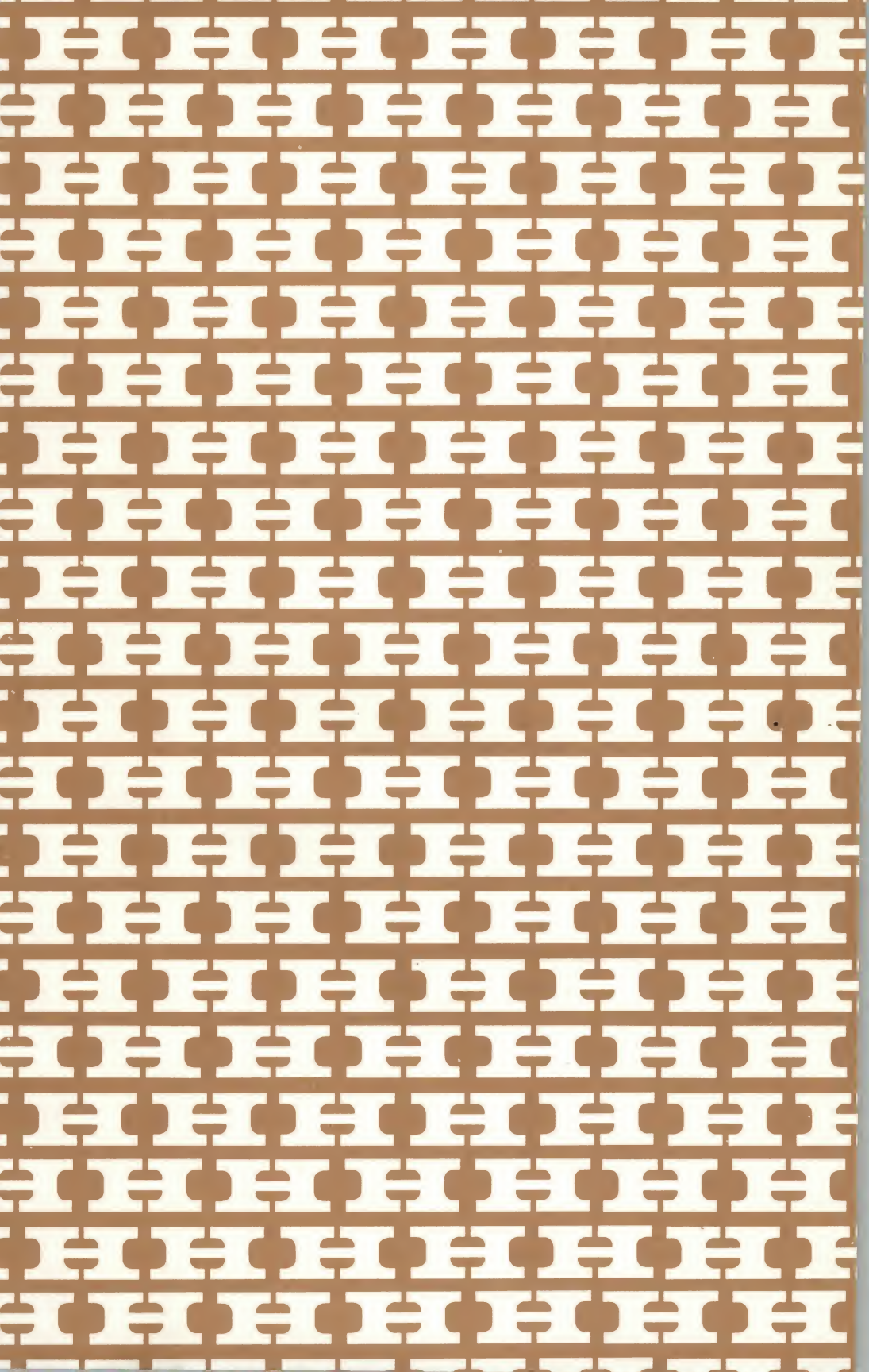


## NOTES

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## The BULLETS

*(See back cover)*

Illustrated on the back cover are the ten different bullet types produced by Hornady. They are produced in 118 weight/caliber combinations giving you the widest choice of bullets for handloading from any single manufacturer. Each of these Hornady designs is engineered a little differently to allow you to choose the exact bullet that is right for your type of shooting. And each of these bullets is detailed in this handbook with comprehensive loading and ballistics information.

## And the PRESS



Hornady and Pacific go hand-in-hand. Pacific's new **00-7™ Press** is ideal to handle any of the reloading jobs described in this handbook...including full length case resizing and bullet swaging. Its exclusive design features include ■ **Angled frame and offset handle** for operator convenience ■ **Automatic priming**, and ■ **"Power-Pac" compound linkage** to multiply handle-to-ram energy for heavy-duty reloading jobs. For a complete catalog of metallic reloading equipment, write:

**Hornady Manufacturing Co.**  
Box 1848, Grand Island, NE 68801



# Hornady Bullets



SPIRE POINT



ROUND NOSE



HOLLOW POINT



BOAT TAIL  
HOLLOW POINT



BOAT TAIL  
SPIRE POINT



FULL METAL JACKET  
ROUND NOSE



HOLLOW POINT



FLAT POINT



FULL METAL JACKET  
FLAT POINT



SEMI WADCUTTER